

Benthic
Community Evaluation
of Jackfish Bay
Lake Superior
1969
1975
1987

JACKFISH BAY

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**BENTHIC COMMUNITY EVALUATION
OF JACKFISH BAY, LAKE SUPERIOR,
1969, 1975 AND 1987**

Prepared for:

**Ontario Ministry of the Environment
Northwestern Region**

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and

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1.0 INTRODUCTION

1.1 Background and Objectives

Since 1973, the Great Lakes Water Quality Board (GLWQB) of the International Joint Commission (IJC), in its annual assessments of water quality in the Great Lakes, has identified specific areas which have serious water pollution problems. These areas were defined as geographical locations in the boundary waters where one or more of the general or specific IJC water quality objectives or jurisdictional standards or criteria were not being met, and where beneficial uses were or could be impaired. In 1974, the GLWQB identified 23 problem areas in the upper Great Lakes, one of which was Jackfish Bay, Lake Superior.

Jackfish Bay was identified as an area of concern, primarily because of the occurrence of fish tainting (due to elevated phenol concentrations and toxic substances), resulting from the effluent discharges of Kimberly-Clark of Canada Limited's pulp and paper operations at Terrace Bay, Ontario. In addition, levels of mercury and PCB's in Jackfish Bay sediments continued to exceed the Ontario Ministry of the Environment's (MOE) guidelines for the disposal of dredged spoils in open water (Persaud and Wilkins, 1976), despite the discontinuance, prior to 1971, of the use of mercurial slimicides and mercury-contaminated caustic soda by the local pulp and paper industry. In a 1985 report by the GLWQB, the types of problems in Jackfish Bay were summarized as being conventional pollutants, heavy metals, toxic organics, contaminated sediments, fish consumption advisories and impacted biota. The major source of pollution threatening the water quality of Jackfish Bay is the result of discharges from the Kimberly-Clark pulp and paper mill in Terrace Bay.

The first study, devoted to the evaluation of impacts from pulp and paper wastes on the biota of Jackfish Bay, was carried out by the Ontario Water Resources Commission in 1969. German and Pugh (1969) reported severe toxic pollution in Moberly Bay to a distance of 0.4 km from the mouth of Blackbird Creek. Sediments in this impacted area were found to be void of benthic fauna. In addition, for an area of at least 5 km², contiguous with the mouth of Blackbird Creek, the benthic community was dominated by pollution-tolerant oligochaetes indicative of a severely impacted environment. Since the completion of this first study, the MOE has continued to routinely monitor the benthic

communities of Jackfish Bay. Major macroinvertebrate and sediment surveys were performed in 1975 and 1987; however, data interpretation on these surveys has not been completed.

Unlike the sparse amount of research done in Jackfish Bay, the effects of pulp and paper mill effluents on sediments and macrobenthos have been well-documented for the receiving waters of Nipigon Bay, which lies immediately to the west (German, 1968; BEAK, 1970; Cook, 1975; Fox, 1977; Sandilands, 1977; Vander Wal, 1977). Inasmuch as the macroinvertebrate communities and substrates are similar in both embayments, the works by these researchers provide a source of comparison to help determine the effect of the pulp and paper discharges on the water quality of Jackfish Bay. For example, Vander Wal (1977) reported similar findings to German and Pugh (1969) in that, with close proximity to the outfall, inhibition and ultimate extinction of oligochaete populations occurred. In Nipigon Bay, this was assumed to be the result of increased levels of organic carbon and total sulphur.

The benthos of nearshore and harbour waters of Lake Superior has been studied to some extent. The extensive species lists of Thomas (1966) for north shore bays include nine species of hirudineans, 11 crustaceans, 30 insects, six unionids and 17 pisidiids. Thomas did not identify oligochaetes, but Hiltunen (1969) found an equally diverse tubificid and naidid association, together with the polychaete Manayunkia speciosa on the southwest shore. Pontoporeia hoyi is abundant and frequently dominant through Lake Superior, with the exception of shallow, nearshore areas (Cook and Johnson, 1974). Other common benthic organisms include the oligochaete Stylodrilus heringianus, several chironomids and the pea clam, Pisidium. Naidid oligochaetes are common, particularly on rocky substrates. Tubificids dominance occurs only in areas of organic enrichment, such as the Kaministiquia River mouth area of Thunder Bay (BEAK, 1987), inner Nipigon Bay (Vander Wal, 1977), and Moberly Bay (German and Pugh, 1969), all of which are affected by organic enrichment from pulp and paper effluents.

Cook (1975) reported mean faunal densities in the Jackfish Bay area to be 620 individuals/m² with a range of 430 to 810/m². However, Cook (1975) found the major taxon to be nematodes which have been overlooked by most other researchers because of the coarser sieves used to process their samples. Cook (1975) concluded that coarse-grained glaciolacustrine sediments were capable of supporting higher benthic stock than

the more flocculent, fine-grained muds. In addition, a negative correlation between the sediment organic carbon content and faunal abundance was strongly indicated.

Beak Consultants Limited (BEAK) has been commissioned by the Ministry of the Environment, Northwestern Region, to assess the overall environmental status of Jackfish Bay through the detailed identification and evaluation of benthic samples collected by German and Pugh (1969) and the subsequent surveys by the MOE in 1975 and 1987.

The main objectives of this project are to:

1. provide detailed taxonomic revisions to the benthos identified in 1969 and 1975, especially the Oligochaeta and Chironomidae;
2. identify and enumerate the macroinvertebrates present in samples collected in 1987;
3. evaluate the benthic data by examining community structural trends through determination of:
 - o numbers of taxa and species composition,
 - o density and distribution of taxa,
 - o evenness of the community,
 - o diversity of the community,
 - o richness of the community,
 - o presence-absence of indicator species, and
 - o correlation with substrate conditions;
4. determine the effect of physical and chemical variables on the macroinvertebrate community structure;
5. assess the correlation between the distance from pulp and paper discharges and the composition of benthic communities; and
6. evaluate temporal trends in benthic community from 1969 to 1975 and 1975 to 1987 with reference to available water quality and sediment quality data.

1.2 Description of the Study Area

Lake Superior and, in turn, Jackfish Bay lie almost entirely within the Precambrian Canadian Shield, an area of noncalcareous, igneous and sedimentary rocks. In the lake

bed, the occurrence of bedrock is limited to the shoreline and areas of high bottom relief. The bed is covered by a veneer of glacial tills which are overlain by a thin layer of recent depositional sediments (Matheson and Munawar, 1977). Lake sediment is generally characterized by sand and clay combinations. The lake is classified as oligotrophic as a result of its depth (mean depth 146 m), low water temperature (surface 11 to 16°C) and low nutrient concentrations (NO_3^- 300 ug/L, total phosphorus 3 to 6 ug/L, soluble reactive phosphorus 0.5 to 1.5 ug/L). In addition, Lake Superior contains the lowest concentrations, in all the Great Lakes, of inorganic carbon (Chandler, 1964) and dissolved and particulate organic matter (Robertson and Powers, 1967). The lake's oligotrophic nature is reflected in its meager standing crop of macrobenthos which is a lakewide mean of only 525 individuals/m² and a mean biomass of 50 mg/m² (J. Great Lakes Res., 1977).

Jackfish Bay is situated on the northern shore of Lake Superior, approximately 215 km east of Thunder Bay and 475 km west of Sault Ste. Marie (Figure 1.1). The bay covers approximately 10 km² and is divided into two inner arms. The western arm, which receives water from Blackbird Creek, is called Moberly Bay and covers about 1 km². The eastern arm, which receives water from Jackfish Lake, is called Tunnel Bay and covers about 2 km². The area of Jackfish Bay (excluding Moberly Bay and Tunnel Bay) for the purpose of this study has been further subdivided into inner and outer Jackfish Bay (see Figure 1.2).

There is limited recreational use in the bay. Tunnel Bay and Jackfish Bay proper provide some sport fishing opportunities for the residents of Jackfish and summer tourists at a camp on Jackfish Lake. In addition, the bay provides fish spawning and nursery habitat.

The general features of the Blackbird Creek drainage basin are presented in Figure 1.3. The watershed drains an area of approximately 62 km². The creek originates in the vicinity of Terrace Bay at an elevation of 289 m, and flows in a southeasterly direction for approximately 16 km to Moberly Bay at an elevation of 183 m. Blackbird Creek passes through two small lakes, Lake A which is presently filled in with wood pulp and fibre, and Moberly Lake which originally covered 28 ha, but has been greatly reduced in area and depth by pulp and paper waste materials. The mean natural flow of Blackbird Creek has been estimated by German and Pugh (1969) to be in the neighbourhood of 0.7 m³/sec.

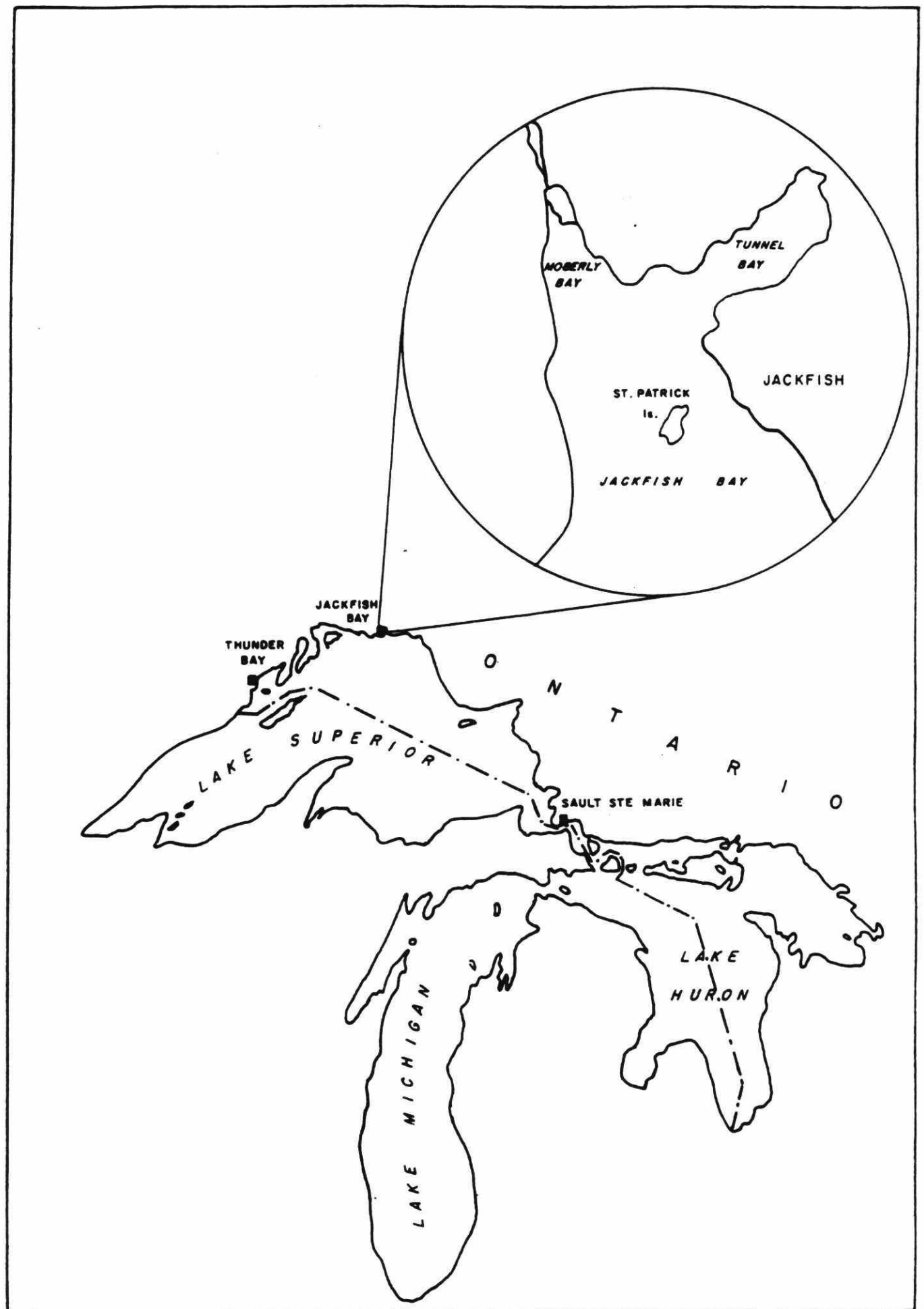


FIGURE 1.1: LOCATION OF JACKFISH BAY IN LAKE SUPERIOR
(from MOE, 1972)

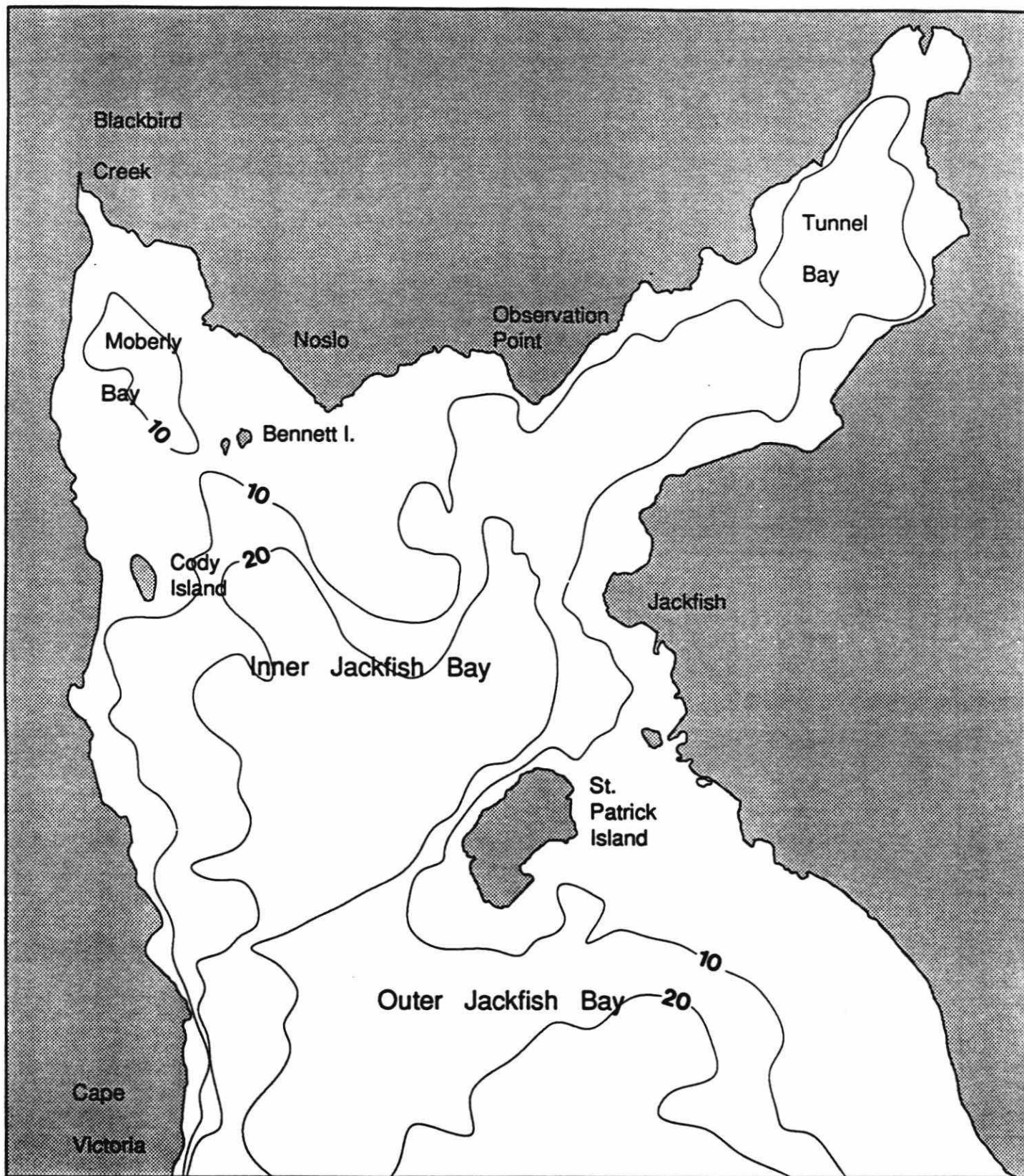


FIGURE 1.2 Study Area Map
Depth Contours in Fathoms

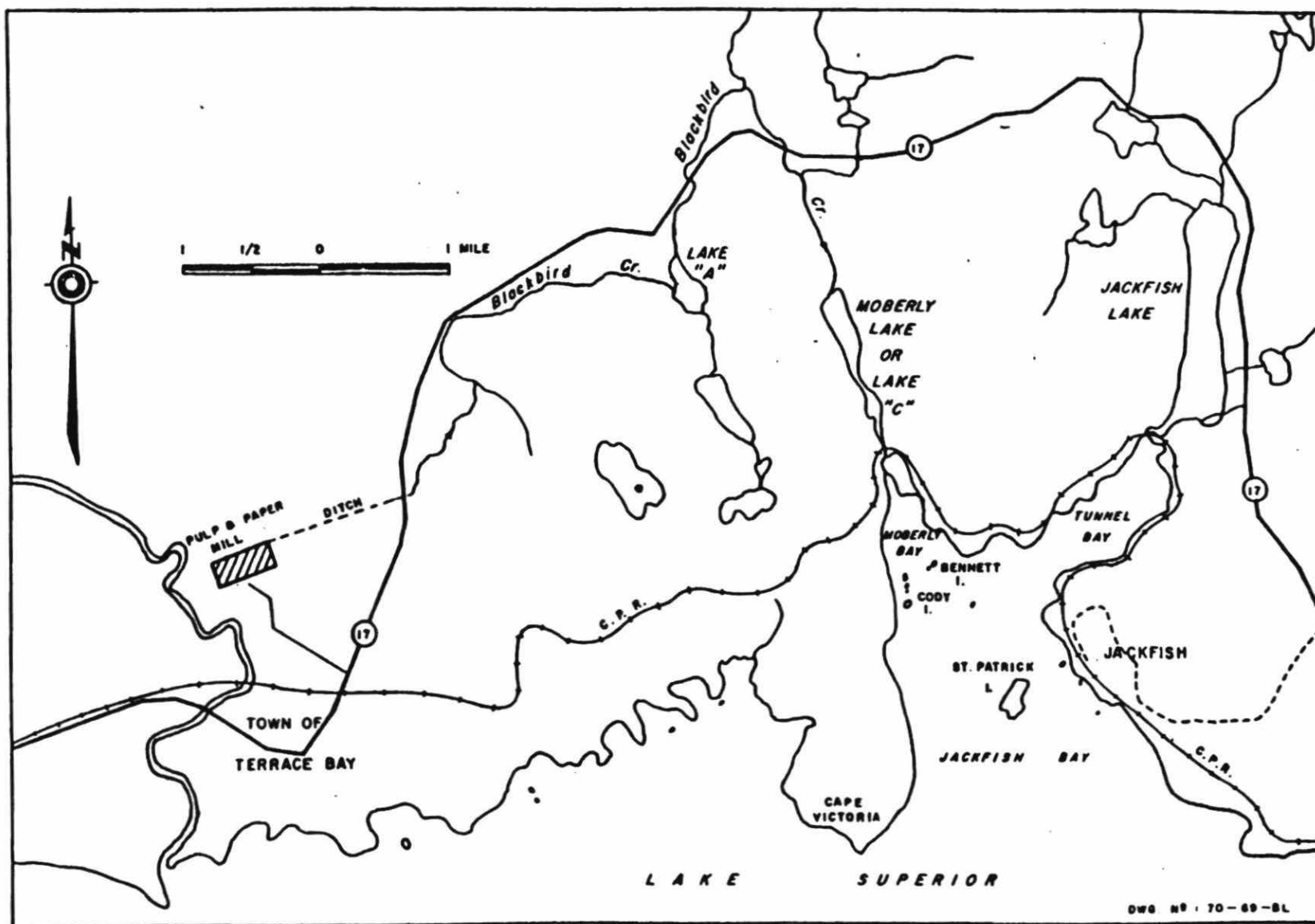


FIGURE 1.3: BLACKBIRD CREEK DRAINAGE BASIN
(from MOE, 1972)

Blackbird Creek has been basically turned into a waste disposal system for Kimberly-Clark of Canada Ltd. pulp and paper facility at Terrace Bay. The pulp and paper effluent enters the headwaters of Blackbird Creek via an open ditch and eventually discharges into the head of Moberly Bay. Records of BOD₅ and suspended solids loadings are provided in Table A2.10 (Appendix 2).

The major use of water from Lake Superior in the vicinity of Jackfish Bay is for process water for the Kimberly-Clark of Canada Ltd. pulp and paper mill. The original unbleached kraft mill commenced operation in 1948, and subsequently expanded in 1972 to a fully bleached two-line kraft mill, increasing capacity from 240 ADt/d to 400 ADt/d. In 1978, a major expansion took place with the addition of a new bleaching and finishing plant, bringing capacity to 1,135 ADt/d. A primary effluent treatment system, which includes two reactor clarifiers, was installed in the 1978 expansion.

Sometime between 1975 and 1987, a spill of No. 4 and/or No. 6 type crude oil occurred, resulting in viscous oil deposits in the sediments in portions of Moberly Bay. These deposits were first discovered during the 1987 benthic survey. The origin of the oil is unknown.

2.0 METHODS

2.1 Field Survey Methods

1969 Survey

Benthic samples were collected at 108 stations in Jackfish Bay in August 1969. Samples were collected using a ponar dredge which samples an area of approximately 0.05 m². Figure 2.1 illustrates the position of the stations along transects which generally ran from north to south. During collection of the samples, water depth and sediment texture were recorded, as well as any other distinguishing features such as vegetation, odour, oil and organic content.

Benthic samples were washed through a U.S. No. 24 mesh (0.0256 inch) sieve and the macrobenthos sorted, on-site, from the remaining material. The macroinvertebrates were preserved in 70% ethanol and transported to the laboratory for basic taxonomic identification and enumeration.

In conjunction with the sampling for macroinvertebrates, composite water samples were collected at nine stations throughout Jackfish Bay. The water samples were analyzed for BOD, suspended solids, dissolved solids, phenol and colour. The locations of the water sampling sites are presented in Figure 2.1.

In an associated study of Jackfish Bay in 1970, sediment samples were collected at 12 locations and analyzed for mercury and percent organic matter. These data, although collected a year later, are considered to be reasonably representative of conditions in 1969 and are included in this report.

1975 and 1987 Surveys

In August of 1975 and September 1987, the Ministry of the Environment carried out more intensive surveys of Jackfish Bay. Sampling stations were more numerous in 1975 and 1987 than in 1969. In both 1975 and 1987, stations were located on a longitudinal and latitudinal grid system at six-second intervals. Positioning of stations was achieved by comparing sounding depths with nautical chart No. 2305, and by dead reckoning with islands and other prominent features. Samples for macroinvertebrate analysis were

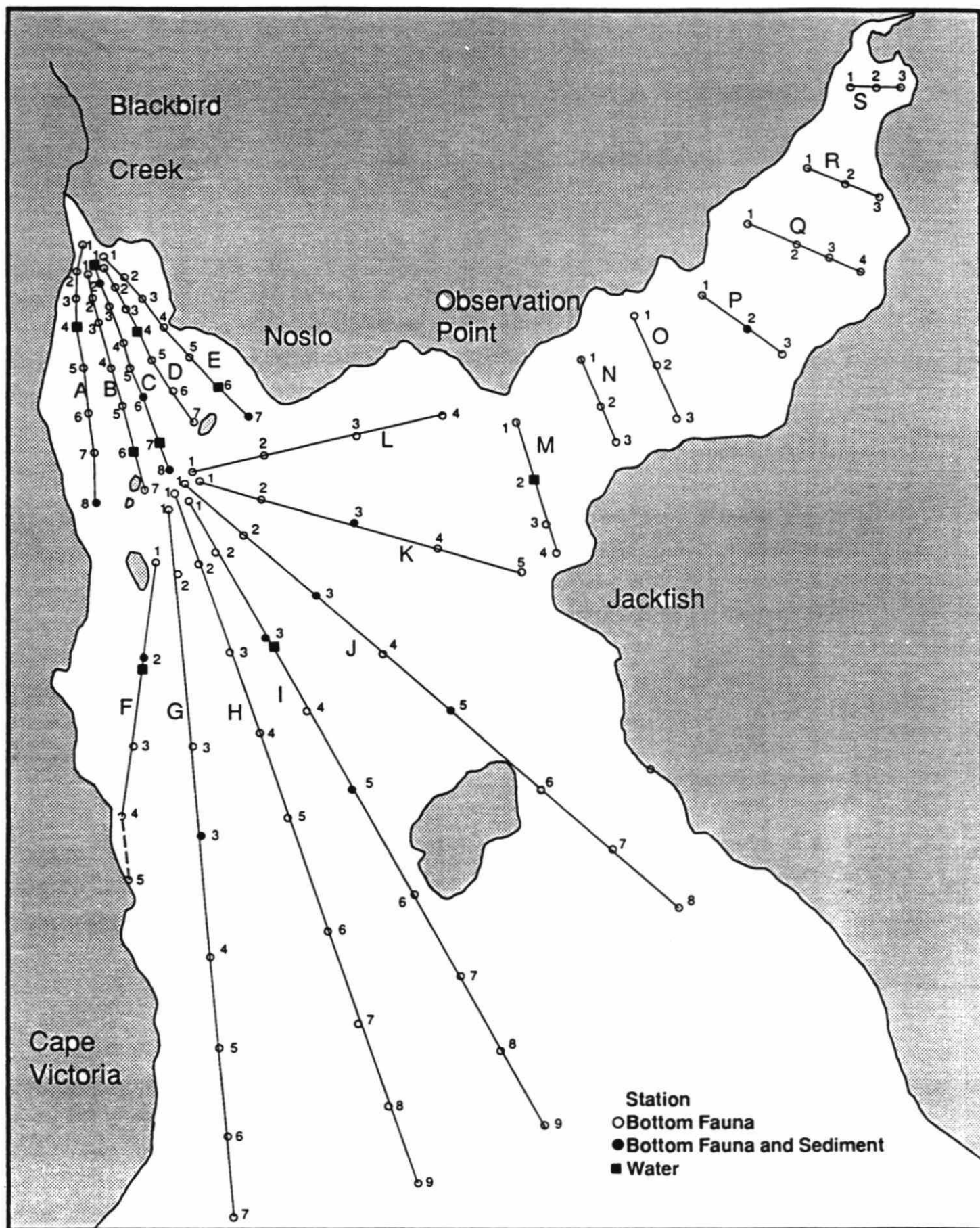


FIGURE 2.1 Map showing Sampling Stations for 1969

collected and processed in a similar fashion to the procedures followed in the 1969 survey. Figures 2.2 and 2.3 illustrate the locations of the sampling stations for benthos. In 1975, 223 stations were sampled for benthos while, in 1987, 128 stations were sampled.

In the two most recent surveys, more attention was directed towards the quality of the sample collected. If the samples were collected from rock substrates or other problems were encountered in retrieval, they were labelled as qualitative or poor samples. Consequently, samples labelled as such were only used in qualitative analysis of data, based only on species presence or absence.

In addition to the samples collected for biological analysis, sediment and water samples were taken and submitted to the Ministry of the Environment laboratories for chemical analysis. The results of the chemical analysis for the 1975 and 1987 surveys are presented in Table A2 (Appendix 2). The station numbers are identical to those stations sampled for macrobenthos, and their locations are illustrated in Figures 2.2 and 2.3.

2.2 Benthic Taxonomy

In December 1987, 455 sorted benthic samples collected during the three major Jackfish Bay surveys (1969, 1975 and 1987) were forwarded to BEAK for detailed taxonomy and enumeration of the macroinvertebrate communities. Revisions were made to the species previously identified by MOE personnel for the 1969 and 1975 samples to standardize the biological results. In addition, detailed taxonomic identifications were performed on the Chironomidae and Oligochaeta which had not been previously identified in these two surveys. BEAK also carried out detailed taxonomy on the 1987 samples, all of which were previously unidentified.

The Chironomidae were sorted into major groups under a stereomicroscope (40 x) and enumerated. Representatives of each group were decapitated, mounted in a permanent clearing mountant and identified to the generic level. Identifications followed the scheme used by Oliver et al. (1978) and Oliver and Roussel (1982).

Oligochaetes were identified to the specific level with reference made to the taxonomic keys of Hiltunen and Klemm (1980), Stimpson et al. (1982) and Brinkhurst and Jamieson (1971). Oligochaetes were dehydrated in absolute ethanol and mounted in a permanent clearing mountant. Samples containing 125 individuals or less had all the oligochaetes

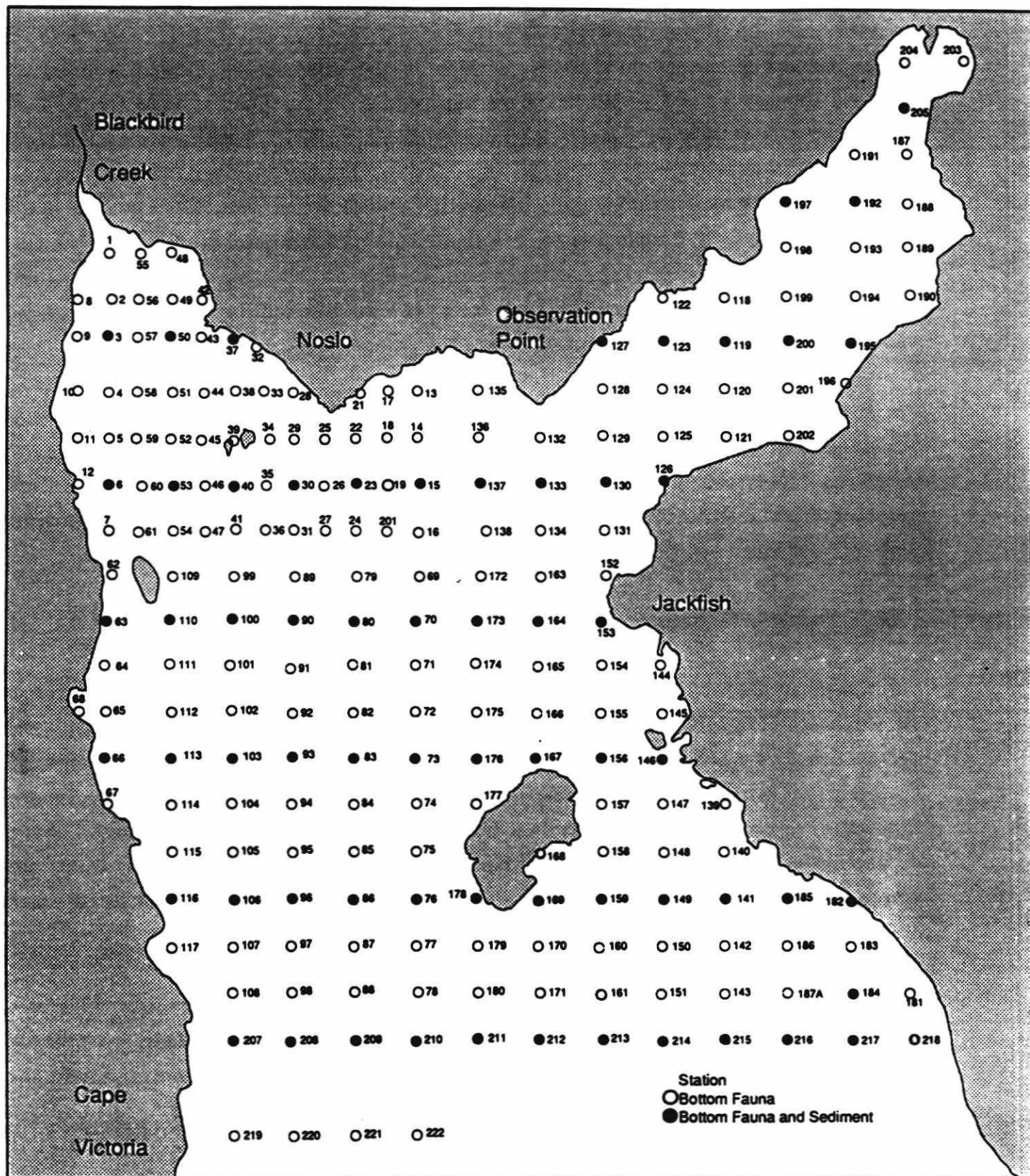


FIGURE 2.2 Map showing Sampling Stations for 1975

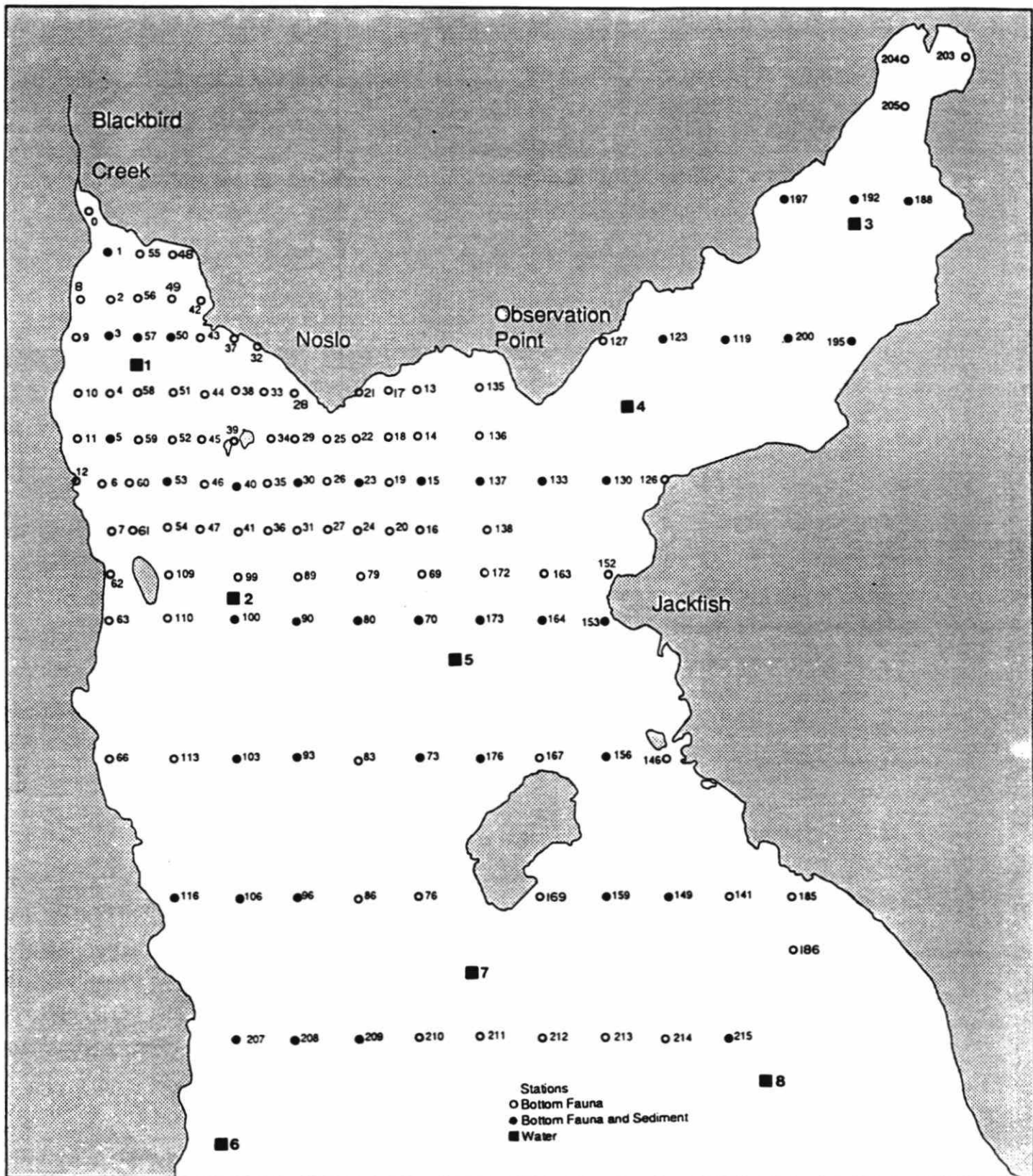


FIGURE 2.3 Map Showing Sampling Stations, 1987

mounted and identified. Samples with oligochaete numbers in excess of 125 individuals had a total of 100 worms mounted and identified.

Confirmatory identifications of selected specimens of oligochaetes and chironomids from the Jackfish Bay collections were undertaken by D.R. Barton of the University of Waterloo.

Other macroinvertebrate taxa were identified to the lowest practical level with reference made to many taxonomic keys. Other taxonomic keys used included Pennak (1978), Clarke (1981) for Mollusca; Wiggins (1977) for Trichoptera; and Edmunds *et al.* (1976) for Ephemeroptera. A complete list of all taxonomic keys referred to are itemized separately in the reference section of this report (Section 5.0).

For the calculation of biotic indices, such as number of taxa, diversity, evenness and richness, the immature tubificids were assigned to either Tubifex tubifex or Limnodrilus hoffmeisteri according to the presence or absence of hair setae. This assumption was based on the premise that, while performing the detailed taxonomy, it was noted that of the tubificids which must be mature for species level identification, approximately 95% of mature individuals were T. tubifex and L. hoffmeisteri. Chironomid pupae which appeared infrequently were excluded from the calculations of biotic indices.

2.3 Standardization of Environmental Observations

Field notes describing the physical nature of substrates and water depth were used in discriminant analysis to assess the effects of natural abiotic variables on the biological communities (Section 2.4). A scoring system was developed to identify the physical variables at each station. The scoring system was used to categorize descriptive data on substrate texture, odour, organic content, oil and vegetation. The particulars of the scoring system used for the physical variables are presented in Table 2.1.

In order to evaluate the composition of benthic communities in relation to the distance from the source of pollution (i.e., mouth of Blackbird Creek), a grid system was developed to assign stations a distance from Blackbird Creek. It was assumed that Tunnel Bay would be, at most, only slightly influenced by the Kimberly-Clark effluent

TABLE 2.1: SCORING SYSTEM DEvised TO QUANTIFY FIELD NOTE VARIABLES

Parameter	Score
Sediment Texture	
Boulders and Bedrock	1
Rocks and Gravel	2
Gravel	3
Gravel and Sand	4
Gravel and Clay	5
Sand	6
Sand and Silt	7
Sand and Clay	8
Silt	9
Clay and Silt (mud)	10
Clay	11
Organic Content	
Sludge/Fibre < 25%	1
25% to 75%	2
> 75%	3
Detritus	4
Odour	
Present	1
Absent	0
Vegetation	
Present	1
Absent	0
Oil	
Present	1
Absent	0

plume and, therefore, all stations in Tunnel Bay were combined into one category. The grid system designed to quantify the distance of the sampling stations from the source of pollution in each survey year are shown in Figures 2.4 to 2.6. Grid locations assigned to each station, as well as the scoring of the physical factors, are presented in Tables A2.1 to A2.3 (Appendix 2).

2.4 Statistical Methods

Each survey data set (1969, 1975 and 1987) was separately evaluated in terms of biotic indexes, spatial patterns of species composition, and sediment characteristics associated with biotic indexes and spatial patterns. Benthic community status was then compared among surveys in order to identify any long-term changes, and possible reasons for these changes. The evaluation methods applied to each survey data set are described in this section.

2.4.1 Biotic Indexes

The biotic indexes computed at each sampling station in each survey included number of taxa, Shannon-Weiner species diversity (H), species richness (R), species evenness (J), total organism density, tubificid density and percent tubificids. Diversity, richness and evenness were defined as follows:

$$H = - \sum (n_i/n) \log_2 (n_i/n)$$

$$R = (s-1)/\ln (n)$$

$$J = n/\log_2 (s)$$

where: n_i = number of individuals of species i ,
 n = total number of individuals, and
 s = number of taxa.

Densities were expressed as number of organisms per 0.05 m^2 , and density indexes (total and tubificid) were expressed on a log scale.

Index associations with substrate factors were examined by various methods, depending on the nature of the substrate factor distribution. The substrate observations of the sampling crew were categorical (i.e., discrete) variables. These included:

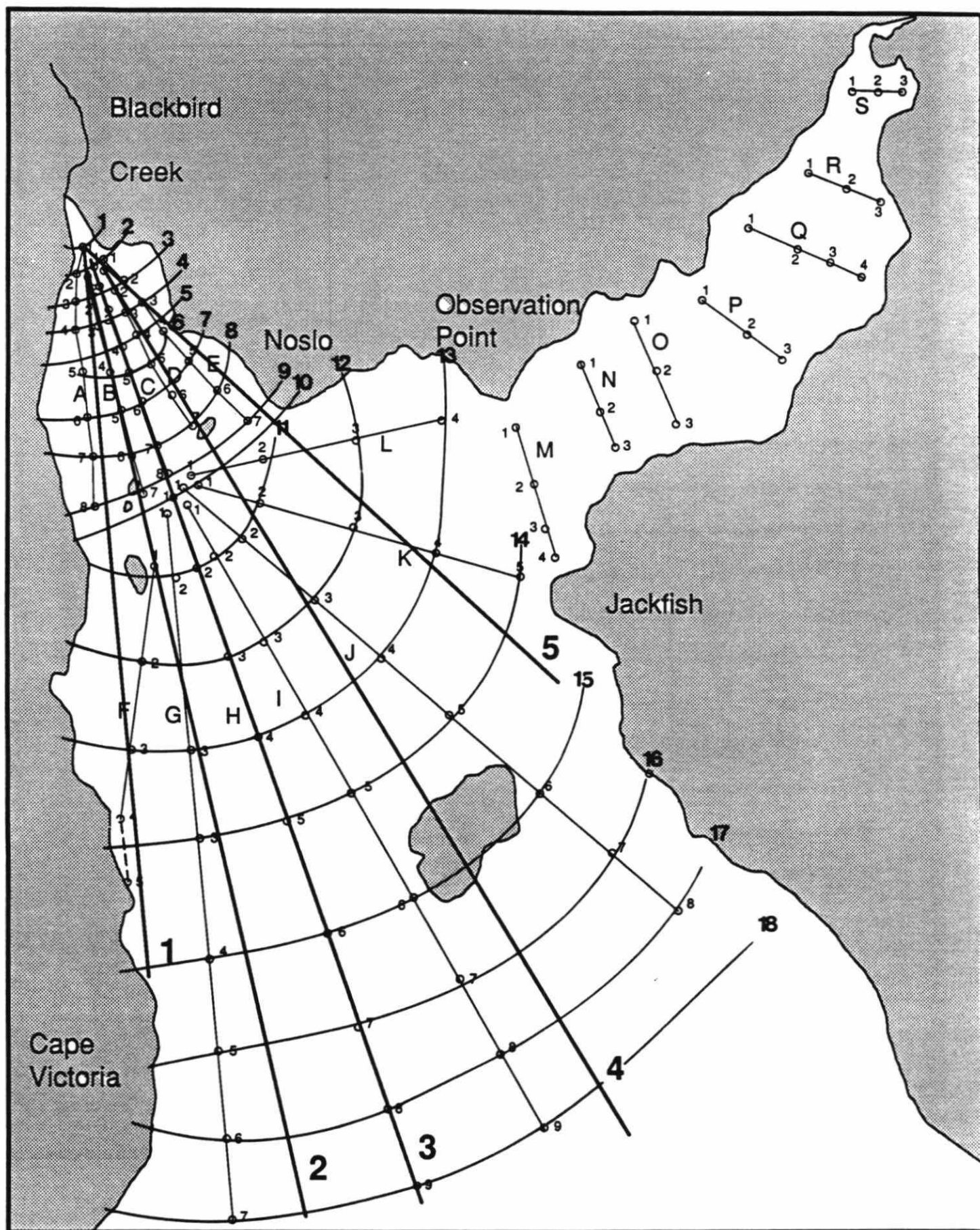


FIGURE 2.4 Station Grid- 1969

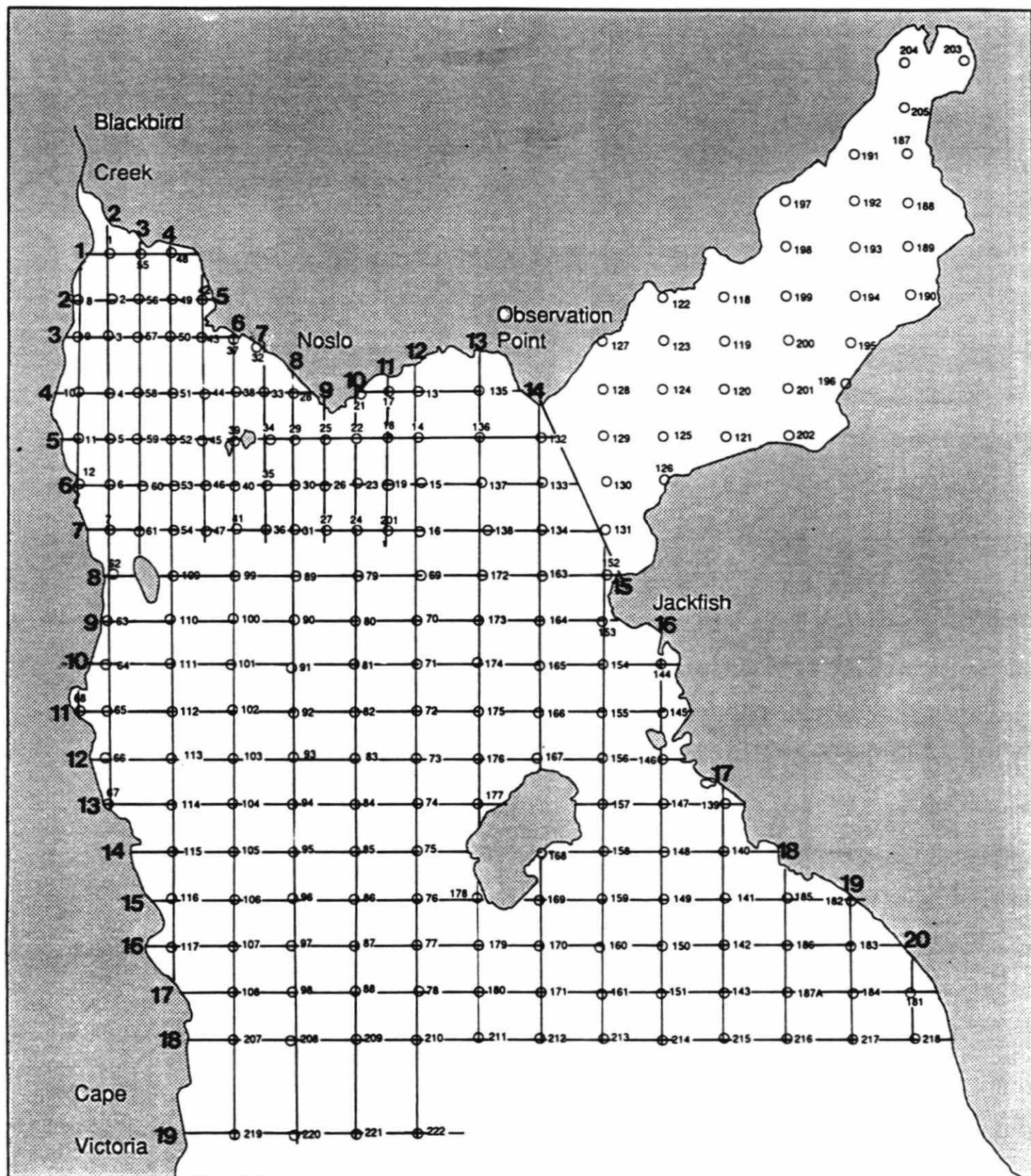


FIGURE 2.5 Station Grid, 1975

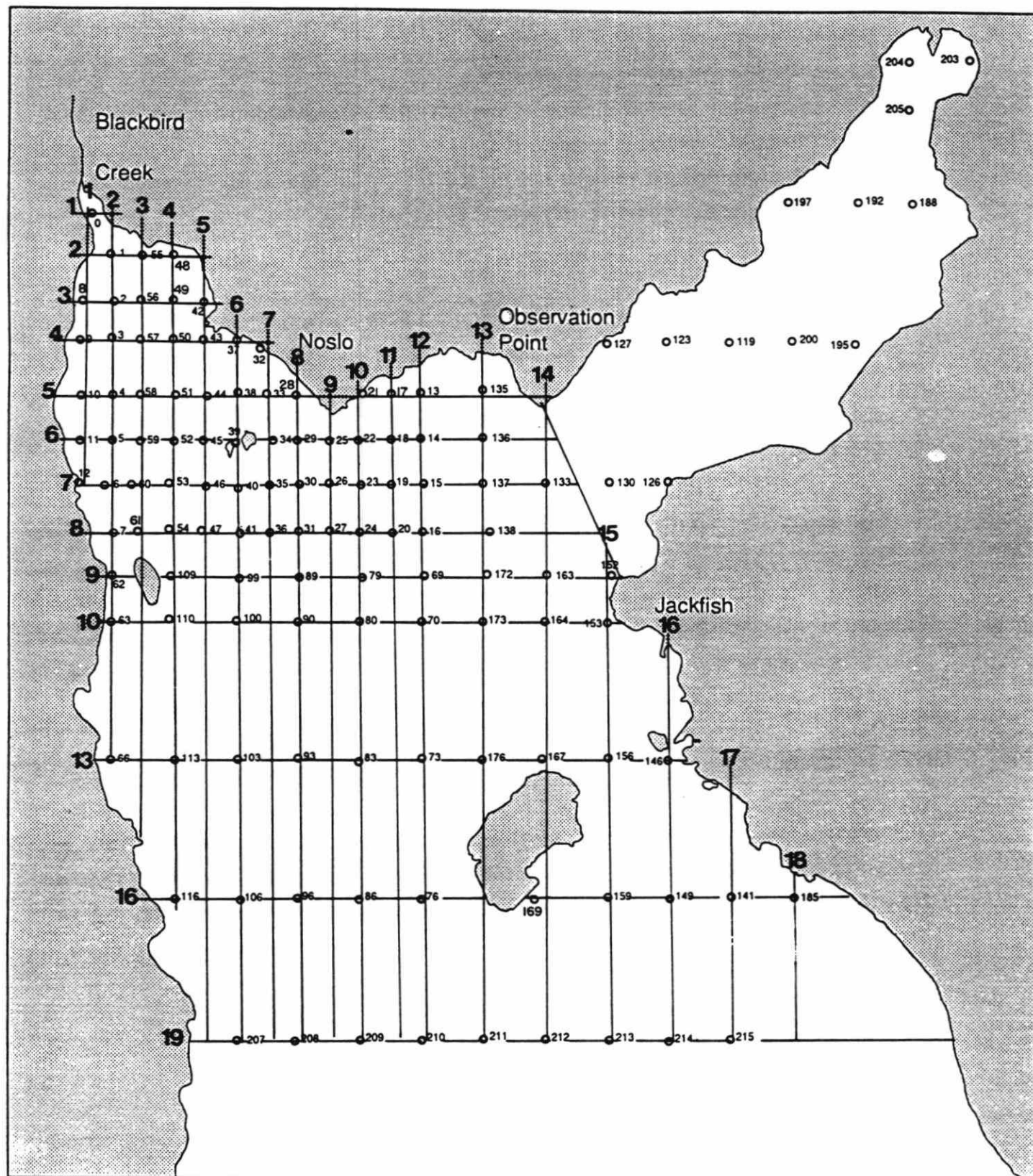


FIGURE 2.6 Station Grid, 1987

- o vegetation (presence, absence = 1, 0);
- o organic matter (increasing content of fibre/sludge/detritus = 0, 1, 2, 3, 4);
- o odour (presence, absence = 1, 0);
- o oil (presence, absence = 1, 0); and
- o texture (increasing content of fine material = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11).

The details of the scoring system are described in Section 2.3. Biotic index categories were similarly defined in order of increasing index value, and a Chi-square coefficient was computed as a measure of association between biotic and substrate categories. In addition, Kendall's Tau C coefficient was computed. In contrast to the Chi-square, Tau is a directional measure of association.

Index associations with sediment chemical characteristics of the substrate were determined by computation of Pearson's r correlation coefficient. This is a directional measure of association suitable for continuous variables. Like Tau, it ranges from -1 (negative association) through 0 (no association) to +1 (positive association). Significance tests were performed on all coefficients to identify substrate factors which may have been influencing biotic indexes at the time of each survey.

2.4.2 Cluster Analysis

Cluster analysis was performed to identify spatial patterns of species composition in the benthic community, using two different measures of biological similarity between stations. The Jaccard coefficient (JC) is based entirely on species presence or absence, without regard to relative species densities. It is computed as follows:

$$JC_{ij} = \frac{c}{a + b - c}$$

This coefficient is suitable for evaluation of qualitative data, where confidence in numerical species density is lacking. Some of the Jackfish Bay samples were considered qualitative in nature due to sampling problems encountered in the field. These samples were included with the others in a qualitative cluster analysis, using the Jaccard coefficient.

A quantitative cluster analysis was also performed for each survey, using only samples which were considered by the field crew to be numerically reliable. The biological similarity between these stations was computed as an inverse measure, the squared Euclidean distance:

$$D_{jk}^2 = \sum_{h=1} (X_{hj} - X_{hk})^2$$

where: X_{hj} = log-transformed density of species h at station j, and
 X_{hk} = log-transformed density of species h at station k.

From the matrix of similarities between pairs of stations, clusters of similar stations were identified by a hierarchical agglomeration procedure. This is a stepwise procedure with fusion of two stations (or groups of stations) at each step, according to their similarities, until eventually all stations are in a single group. Interpretation of spatial pattern takes place at some point prior to the final fusion, when a few very dissimilar clusters of stations are left.

In the quantitative analysis, the fusion strategy followed Ward's method (Norusis, 1986) which minimizes the within-cluster sum of squared distances at each step. In the qualitative analysis, the average link method was used, which selects station groups for fusion which have the greatest average similarity between pairs of stations in opposite groups.

Cluster membership was plotted on a study area map to determine the spatial distribution of each cluster. Station clusters may be interpreted as discrete biological communities (Green, 1979; MOE, 1984). Each cluster was characterized in terms of average values of biotic indexes, densities of key species which differ in abundance between clusters (identified by discriminant analysis of species variables) and average

sediment chemical concentrations. From this characterization, station clusters representing impacted biological communities may be identified.

2.4.3 Discriminant Analysis

Discriminant analysis was performed to identify the key environmental gradients which separate the biological communities as defined by station clusters. The technique is described in detail by Cooley and Lohnes (1971), and its application in benthic community analysis is illustrated by Green (1979) and Green and Vascotto (1978).

The method combines multiple environmental measures in a series of linear additive functions, or discriminant functions, each of which yields a discriminant score for each sample. The functions are derived so as to maximize the score differences between station clusters. The first function derived is the most important, explaining the greatest proportion of environmental variation between clusters. The second discriminant function is less important, and is derived to be independent of the first. Together, they define an ecological map (territorial map) on which each station can be located, using discriminant scores as coordinates.

The standardized coefficients of the original environmental variables in each discriminant function indicate the relative importance of the original variables in distinguishing between station clusters, and provide an interpretation of each function as an environmental gradient. Thus, the major ecologically significant environmental gradients are identified.

Since sediment chemical data were not available for 1969, and were available only for a few stations sampled for benthos in 1975 and 1987, the discriminant analysis was performed on the categorical substrate observations of the field crew in all three surveys. These observations included water depth, vegetation, organic matter, texture (coarse to fine), odour and oil. Such discrete variables do not satisfy the multivariate normality assumptions of the method. Nevertheless, from their associations with biotic indexes, they appeared to be important ecological factors.

Discriminant analysis was also performed on the sediment chemical data in 1975, since chemical data were best represented in this data set. Only stations with a full suite of

chemical data were included (Cu, Ni, Pb, Zn, Fe, Mn, As, Cd, Hg, loss on ignition, total Kjeldahl-N, P and chemical oxygen demand).

3.0 RESULTS AND DISCUSSION

Detailed listings of benthic taxa and densities, along with computed biological indexes (diversity, richness, evenness, etc.), are provided in Tables A1.1, A1.2 and A1.3 for 1969, 1975 and 1987, respectively. Environmental data, including standardized field observations, sediment chemistry and water quality data, are provided in Appendix 2.

3.1 1969 Survey

In 1969, biotic indexes were related to vegetation, organic matter and odour (Table 3.1). Number of taxa, diversity and species richness were positively associated with the presence of vegetation, but negatively associated with organic matter (i.e., material of mill origin). Aquatic macrophytes provide a diversity of habitat for colonization by grazing macroinvertebrates, such as gastropods which feed upon periphyton. In addition, the breakdown of aquatic plants leads to an increase in the quantity of coarse particulate organic matter (CPOM) which provides a suitable habitat for shredders, such as isopods and amphipods. When there is a substantial increase in the amount of fine particulate organic matter (FPOM), there is usually a faunal shift towards gatherers, mainly oligochaetes. Tubificid density and percent tubificids were positively associated with organic matter. Organic matter was classified primarily fibre or sludge, and probably represents mill input. Number of taxa and diversity were negatively associated with substrate odour. Substrate odour is usually present in sediments which have become anoxic as a result of large quantities of decaying organic matter. Only a few pollution-tolerant organisms, mainly Tubificidae, flourish under such stressful conditions. Figure 3.1 illustrates the 1969 species diversity distribution in relation to vegetation, odour and organic matter. In general, the pulp and paper discharges tended to suppress benthic species diversity, and to favour pollution-tolerant tubificids in Jackfish Bay in 1969.

Total organism density in 1969 is shown in Figure 3.2 in relation to both north-south and west-east transect order. Density is low to zero near the mouth of Blackbird Creek (northernmost), increasing over several orders of magnitude toward the end of Moberly Bay, and decreasing again in outer Jackfish Bay. The low density zone encompassing the few most northerly transects may represent toxic effects from the mill effluent, and/or smothering of the substrate by fibre deposition. The west and east shorelines do not

TABLE 3.1: BIOTIC INDEX ASSOCIATIONS WITH SUBSTRATE FACTORS, 1969

Biotic Index	Association Measure	Substrate Factor		
		Vegetation	Organic	Odour
No. of Taxa	Chi-square (df)	61.3 (5)	38.4 (20)	21.5 (5)
	Tau C	0.130	-0.205	-0.227
Diversity (H)	Chi-square (df)	18.9 (6)	39.8 (24)	19.2 (6)
	Tau C	0.097	-0.226	-0.217
Richness (R)	Chi-square (df)	17.9 (5)	32.8 (20)	*
	Tau C	0.102	-0.116	*
Tubificid Density	Chi-square (df)	*	57.7 (24)	*
	Tau C	*	0.113	*
Percent Tubificids	Chi-square (df)	*	72.9 (36)	*
	Tau C	*	0.241	*

* Indicates no significant association.

All association measures reported are significant ($p < 0.05$).

FIGURE 3.1

Benthic Diversity Distribution in Relation to Associated Substrate Factors, 1969

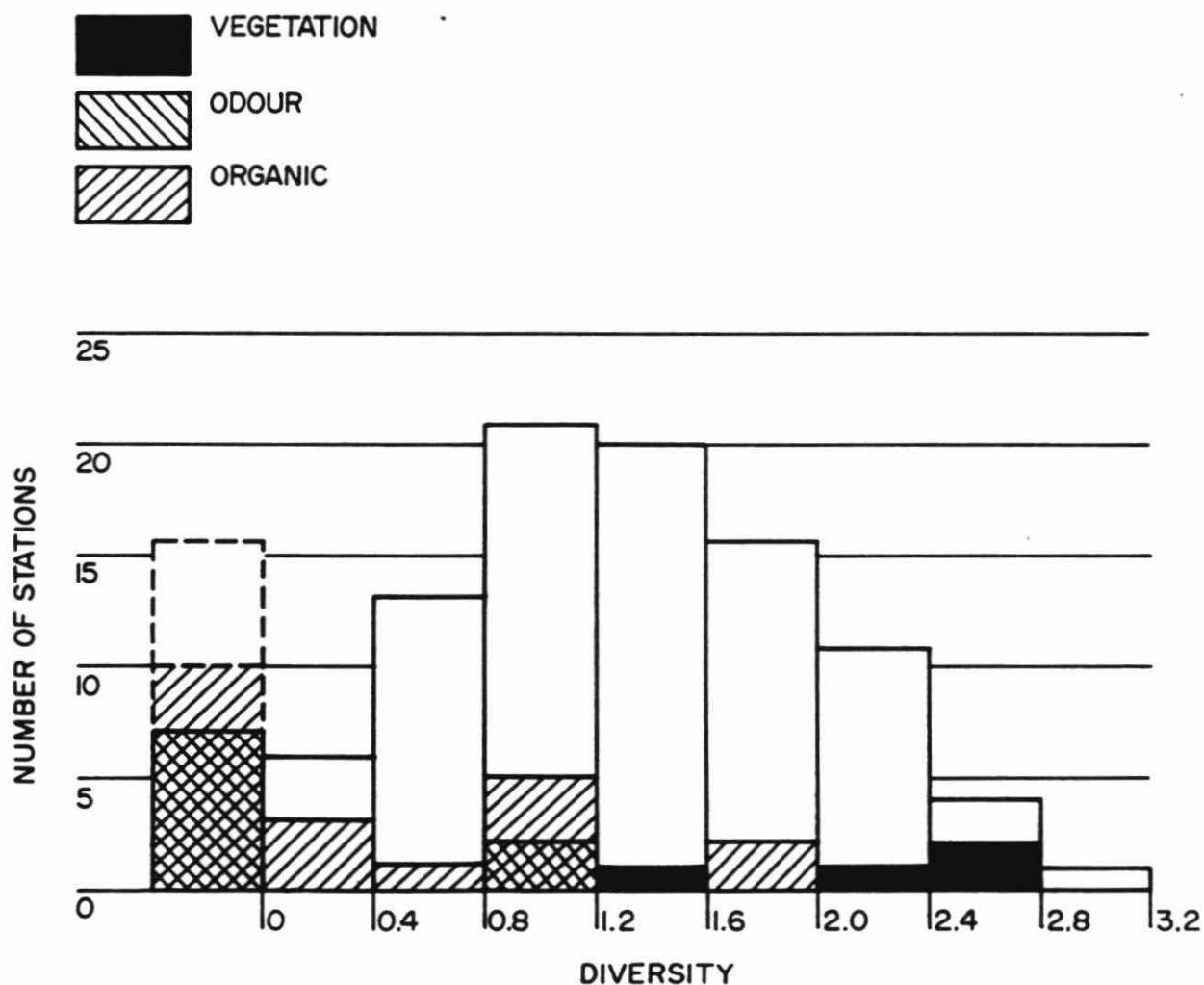
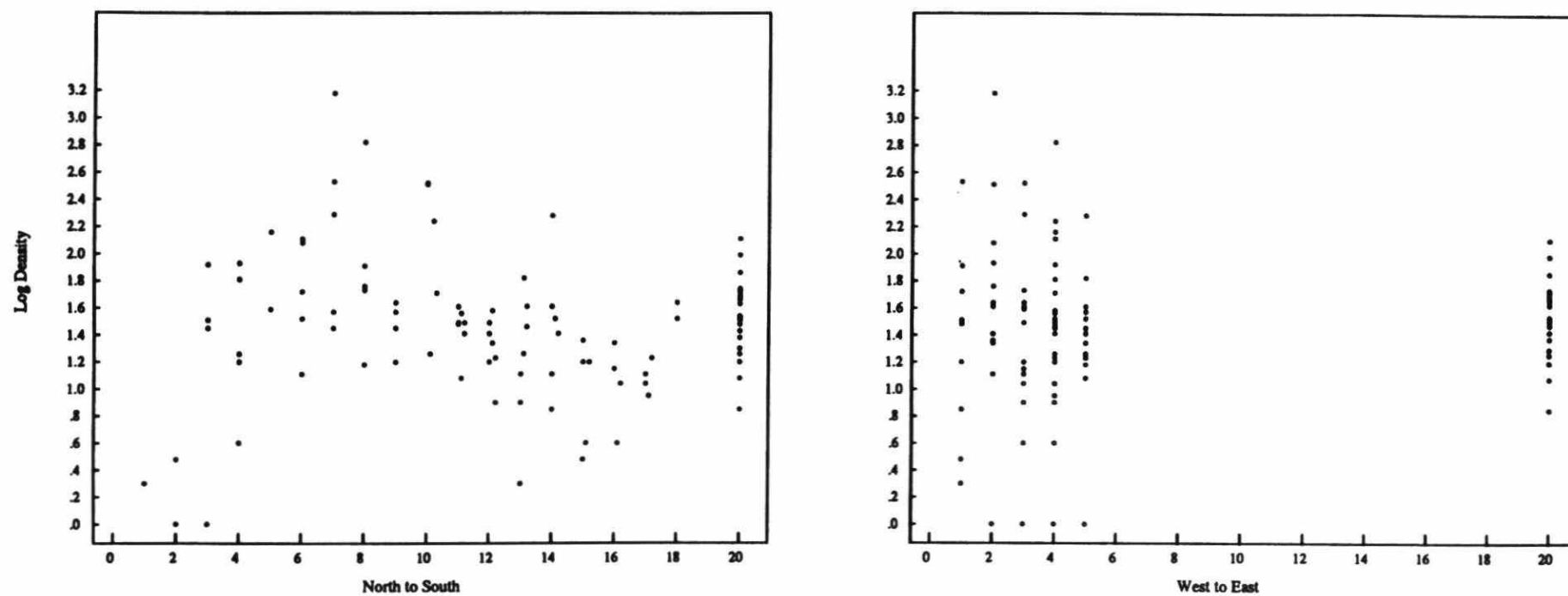


FIGURE 3.2: TOTAL ORGANISM DENSITY IN RELATION TO TRANSECT ORDER, 1969



Tunnel Bay is Transect 20 North 20 West.

exhibit the same degree of density depression. However, the pulp and paper mill loadings have not exhibited much of an impact on the east shoreline of Moberly Bay, probably because the general circulation pattern in Moberly Bay tends to be counter-clockwise, with the effluent plume flowing southward along the western shoreline. On the western side, there were high densities of oligochaetes and low densities of Pontoporeia hoyi, while on the eastern shoreline P. hoyi is common at many stations, and there is a dramatic reduction in the density of tubificids.

Cluster analysis, based on the Jaccard coefficient of similarity, did not reveal any spatially coherent pattern in the benthic community, in any of the three survey years. These cluster solutions are presented in Appendix 1 (Figures A1.1 to A1.3). Evaluation of benthic community patterns was based on the quantitative cluster analysis, using the squared Euclidean distance coefficient.

Figure 3.3 illustrates the pattern of cluster membership in the 1969 benthic community. A dendrogram showing hierarchical relationships between the four station clusters is included in Appendix 1 (Figure A1.4). The characteristic species which distinguish each cluster are listed in Table 3.2. Biotic index characteristics of each cluster are listed in Table 3.3. Cluster 1 stations, located primarily at the northern end of Moberly Bay, were characterized by lower densities and fewer species than the other station groups. Cluster 1 stations at the northern end of Moberly Bay are indicative of severe effluent effects. Many of the stations were devoid of organisms, while the other stations were represented by only a few individuals, mainly pollution-tolerant Tubifex tubifex and Procladius sp. The absence or near absence of benthic organisms at locations close to the mouth of Blackbird Creek can be attributed either to toxicity or to smothering of the substrate by wood fibre. This cluster was also represented, however, by a few deepwater stations in outer Jackfish Bay. The macroinvertebrates dominating these stations were P. hoyi and Stylodrilus heringianus, both indicative of oligotrophic conditions. These two types of stations probably cluster together due to the very low densities of organisms common to both. Mill impacts are responsible for the community in Moberly Bay, while habitat factors unrelated to the mill may be involved in the community structure at outer bay stations. Thus, this cluster comprises a zone of severe impairment and an offshore oligotrophic zone.

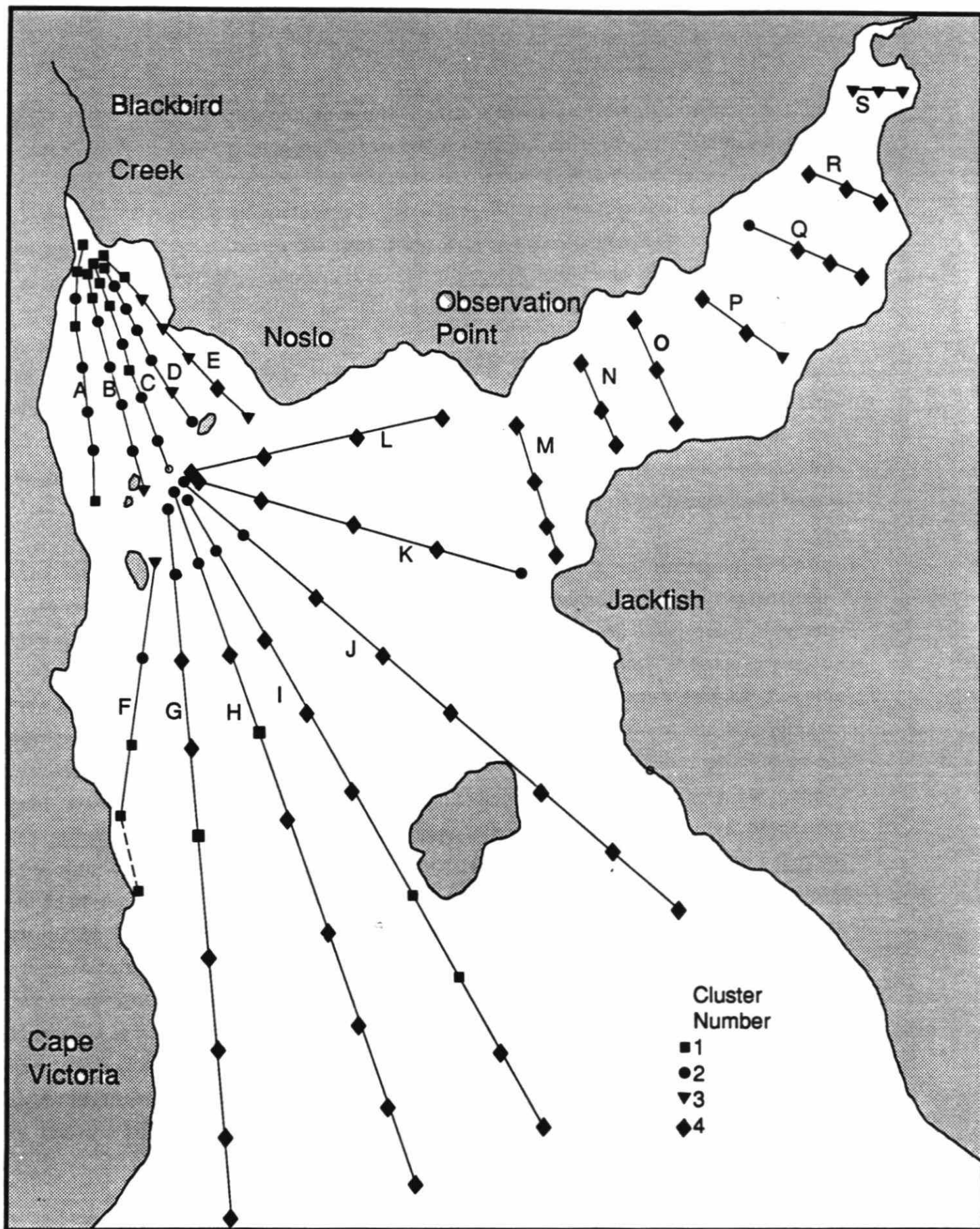


FIGURE 3.3 Benthic Community Patterns based on Cluster Analysis, 1969

TABLE 3.2: KEY BENTHIC SPECIES CHARACTERISTICS OF STATION CLUSTERS, 1969

Species	Mean Log (Density + 1)			
	Cluster 1 n = 20	Cluster 2 n = 27	Cluster 3 n = 11	Cluster 4 n = 50
Nematoda	0	0	0.02737	0
<u>Tubifex tubifex</u>	0.23491	1.69039	0.36628	0.17813
<u>Stylodrilus heringianus</u>	0.06901	0.45845	1.29974	0.20426
<u>Sparganophilus</u> sp.	0	0	0.02737	0
<u>Pontoporeia hoyi</u>	0.11672	0.21269	0.81030	1.18016
<u>Lirceus lineatus</u>	0	0	0.14148	0
<u>Valvata sincera</u>	0	0.02230	0.08210	0.00602
<u>Crictopus</u> sp.	0	0	0.02737	0
<u>Tanytarsus</u> sp.	0	0	0.14148	0.00602

TABLE 3.3: BIOTIC INDEX CHARACTERISTICS OF STATION CLUSTERS, 1969

Biotic Index	Mean Index Values			
	Cluster 1 n = 20	Cluster 2 n = 27	Cluster 3 n = 11	Cluster 4 n = 50
No. of Taxa	1.80	4.78	6.45	4.10
Diversity (H)	0.66	1.22	1.72	1.25
Richness (R)	1.08	0.88	1.40	0.97
Tubificid Density ¹	3.75	172	4.73	3.64
Percent Tubificids	50.3	86.6	12.4	13.1
Total Organisms ¹	7.5	200	38	28

¹ no./0.05 m²

Cluster 2 stations were confined mainly to the middle and northern extreme of Moberly Bay, but further from the creek mouth than Cluster 1 stations. They were characterized by the highest densities of T. tubifex, and higher densities of S. heringianus and P. hoyi than Cluster 1 stations; this cluster is considered to describe a zone or zones of organic enrichment. The geometric mean tubificid density of $3,400/m^2$ (maximum of about $30,000/m^2$) for this cluster is within the range of maximum oligochaete densities ($1,300$ to $8,000/m^2$, depending on depth) in areas of Nipigon Bay affected by pulp and paper effluents. Much greater tubificid densities (in excess of $100,000/m^2$) have been reported in waters downstream of pulp and paper mill discharges at Thunder Bay, Lake Superior (BEAK, 1987). Snails (Valvata sincera) were also characteristic in this station group. Cluster 2 stations imply a limited area of organic enrichment. The increase in the number of T. tubifex is probably a result of settling of FPOM in Moberly Bay after leaving the mouth of Blackbird Creek. The increase in the densities of S. heringianus, P. hoyi and V. sincera suggests that the environmental impact of the mill effluent has not surpassed a level which would eliminate intolerant species at the outer edge of Moberly Bay. However, P. hoyi remained suppressed in density relative to densities in less impacted clusters (3 and 4; Table 3.2), with a mean abundance of only $12.6/m^2$. Similar depressions in Pontoporeia densities were observed by Vander Wal (1977) at locations affected by pulp and paper effluents in Nipigon Bay.

Cluster 3 stations were found primarily in the northeast region of Moberly Bay. They were characterized by the highest densities of S. heringianus, and a diverse species assemblage (Table 3.3). This cluster appears to define a relatively unimpacted, diverse community. Densities of P. hoyi and V. sincera were higher than in station groups further north and west. This community, composed mainly of moderately tolerant and intolerant species, indicate that this area of Moberly Bay has received limited impact from the mill effluent. The increase in the numbers of P. hoyi and V. sincera, as well as the presence of the oligotrophic indicator, Tanytarsus sp., further away from the Cluster 2 stations suggests that the zone of impairment was limited to inner Moberly Bay in 1969.

Cluster 4 includes the majority of stations in outer Jackfish Bay and Tunnel Bay. These stations have the highest densities of P. hoyi (average of $280/m^2$), but lower benthic densities in general than in Clusters 2 and 3. This P. hoyi density is within the range of densities found by Vander Wal (1977) at Nipigon Bay stations distant from the pulp and

paper effluent sources. Cluster 4 appears to represent an unimpaired oligotrophic benthic community.

The progressive increase in the density of P. hoyi and decrease in the density of tubificids from inner Moberly Bay to outer Jackfish Bay and Tunnel Bay strongly suggests that the impact of the mill on the 1969 benthic community was primarily limited to Moberly Bay. This progression is consistent with the gradient in water quality in Jackfish Bay in 1969, as shown in Table A2.8 (Appendix 2). The biological community structure of the stations in Cluster 4 is typical of Lake Superior sandy substrates. In the inner and outer Jackfish Bay samples, P. hoyi, S. heringianus and Rhyacodrilus montana were dominant. This community structure has been reported for other surveys conducted in Lake Superior (Hiltunen, 1969; Freitag et al., 1973; Cook, 1975; Dermott, 1978). As noted by Vander Wal (1977), the progression of increased numbers of P. hoyi away from the source of pollution is probably not only the result of pollution stress, but also the change from a lotic to lentic environment, which is the preferred habitat by this amphipod.

Discriminant analysis (Figure 3.4) suggests that fine substrate material is a key environmental factor distinguishing cluster 3 stations in the northeast region of Moberly Bay. Organic matter is more characteristic of the other station groups, which differ from each other in water depth and presence of vegetation. This discriminant model is based on a limited number of substrate features, and correctly predicts the cluster membership of only 57% of stations. Standardized discriminant function coefficients, representing the relative importance of each substrate measure as a predictor, are listed in Table A2.12, Appendix 2.

3.2 1975 Survey

In 1975, biotic indexes (Table 3.4) were related to vegetation, organic matter and fines. Number of taxa, diversity and species richness were positively associated with the presence of vegetation. Tubificid density and percent tubificids were positively associated with organic matter, as in 1969. Percent tubificids was also positively associated with fines.

FIGURE 3.4

Territorial Map showing Distribution of Jackfish Bay Benthic Station Clusters along Two Discriminant Functions based on Sediment Quality, 1969

Numbers 1-4 refer to cluster membership.

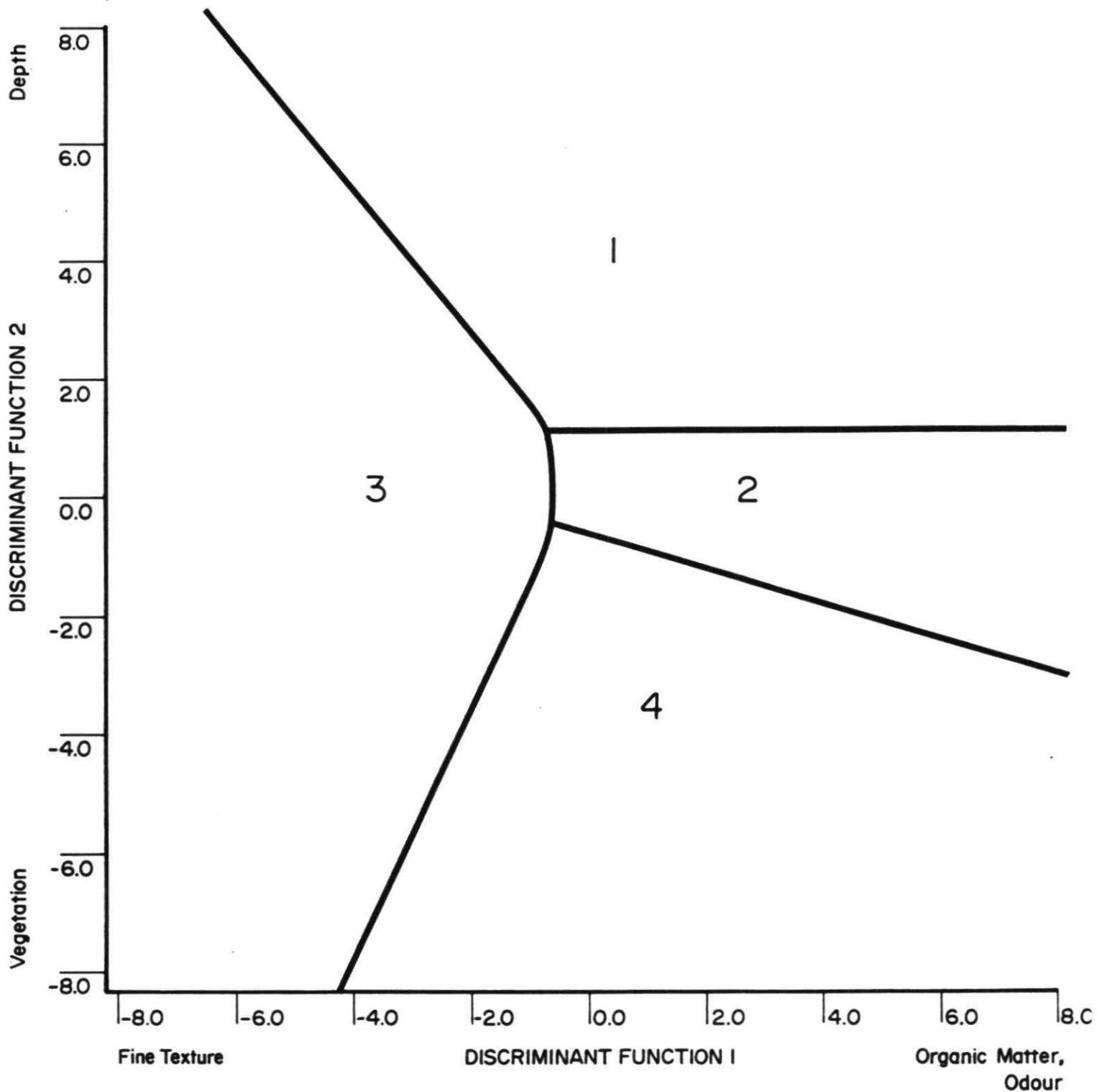


TABLE 3.4: BIOTIC INDEX ASSOCIATIONS WITH SUBSTRATE FACTORS, 1975

Biotic Index	Association Measure	Substrate Factor		
		Vegetation	Organic	Fines
No. of Taxa	Chi-square (df)	63.9 (8)	*	*
	Tau C	0.110	*	*
Diversity (H)	Chi-square (df)	49.3 (7)	*	*
	Tau C	0.074	*	*
Richness (R)	Chi-square (df)	25.7 (7)	*	*
	Tau C	0.095	*	*
Tubificid Density	Chi-square (df)	*	64.8 (24)	*
	Tau C	*	0.118	*
Percent Tubificids	Chi-square (df)	*	54.0 (36)	111.9 (81)
	Tau C	*	0.191	0.144

Biotic Index	Association Measure	Substrate Factor					
		Cu	Cd	Hg	TKN	COD	LOI
No. of Taxa	Pearson's r	*	*	0.325	*	*	*
Diversity (H)	Pearson's r	0.359	0.360	0.395	0.359	*	*
Tubificid Density	Pearson's r	0.376	0.404	0.330	0.471	0.457	*
Percent Tubificids	Pearson's r	0.459	0.469	*	0.534	0.534	0.365

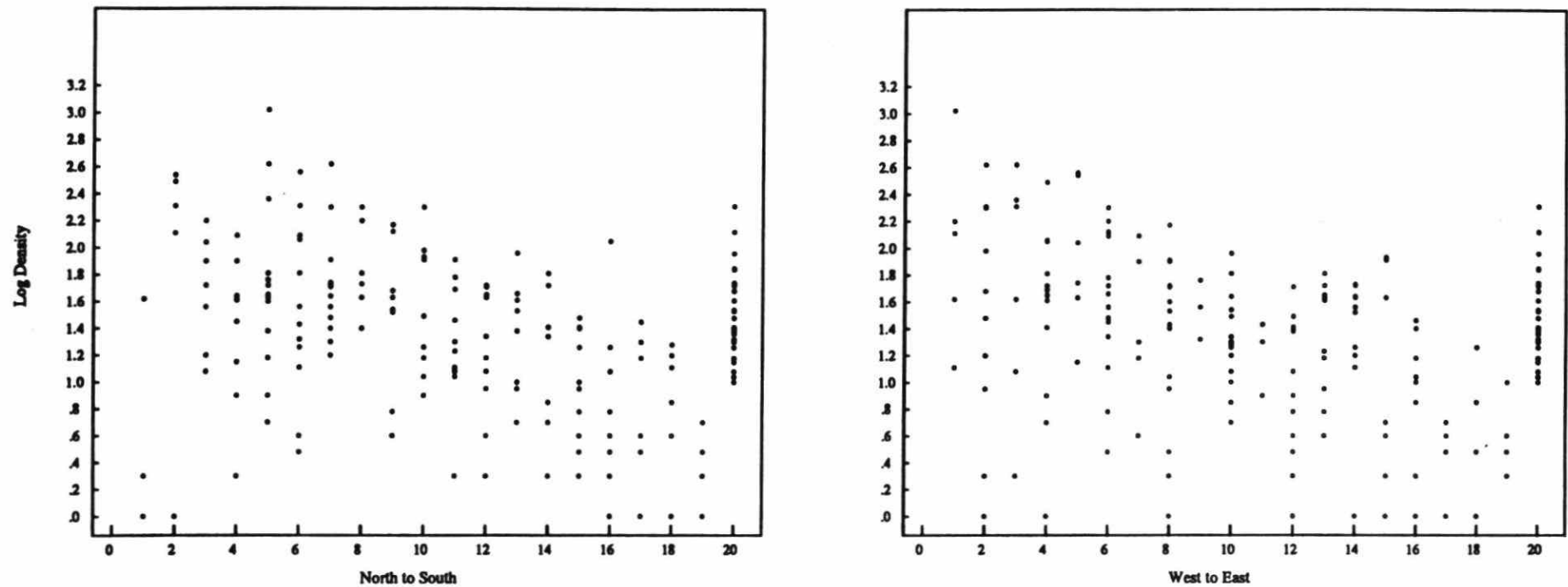
Diversity, tubificid density and percent tubificids were positively associated with Kjeldahl nitrogen and several heavy metals (Cu, Cd, Hg) in 1975 (Table 3.4). Tubificid density and percent tubificids were also positively associated with COD and percent tubificids with loss on ignition, consistent with the organic association of these indexes. The heavy metal associations of tubificids may reflect metal tolerance in these organisms, or the affinity of both tubificids and metals for organic substrates.

Total organism density in 1975 is shown in Figure 3.5, in relation to north-south and west-east transect order. A slight density depression near the creek mouth in Moberly Bay was again suggested, with higher densities toward the middle of the bay; however, this effect was less evident than in 1969 (Figure 3.2). A decrease in density from west to east across the bay was also suggested. Similar to the 1969 survey, it appears as though there is a greater deposition of organic matter along the western shoreline, due to the counter-clockwise current pattern typical of Jackfish Bay. In conjunction with this increase in particulate organic matter, there is an increase in pollution-tolerant tubificids in the western portion of the bay, resulting in the observed west-east gradient.

Figure 3.6 illustrates the pattern of cluster membership in the 1975 benthic community. A dendrogram showing hierarchical relationships between the four station clusters is included in Appendix 1, Figure A1.5. The characteristic species which distinguish each cluster are listed in Table 3.5. Biotic index characteristics of each cluster are listed in Table 3.6 and sediment chemical characteristics are listed in Table 3.7.

Cluster 1 stations comprised most of the outer Jackfish Bay area, as well as a few stations in Moberly Bay (e.g., 1, 2, 3, 4, 5, 7) near the mouth of Blackbird Creek, and were distinguished by low oligochaete densities. A variety of other benthos was also present, including isopods, amphipods, molluscs and chironomids at some stations, although the characteristic species were R. montana, T. tubifex and S. heringianus (Table 3.5). S. heringianus and R. montana are normally present in sandy substrates with low organic content. The inclusion of T. tubifex among the characteristic taxa would appear to be the result of mill influence at some stations, particularly by those in Moberly Bay and western portions of Jackfish Bay. The absence or near absence of organisms at Cluster 1 stations very close to the mouth of Blackbird Creek may be attributed to toxic effects or to smothering of habitat by organic solids from the mill. The mean diversity and mean total density for this cluster was the lowest of the four clusters (0.93 and

FIGURE 3.5: TOTAL ORGANISM DENSITY IN RELATION TO TRANSECT ORDER, 1975



Tunnel Bay is Transect 20 North 20 West.

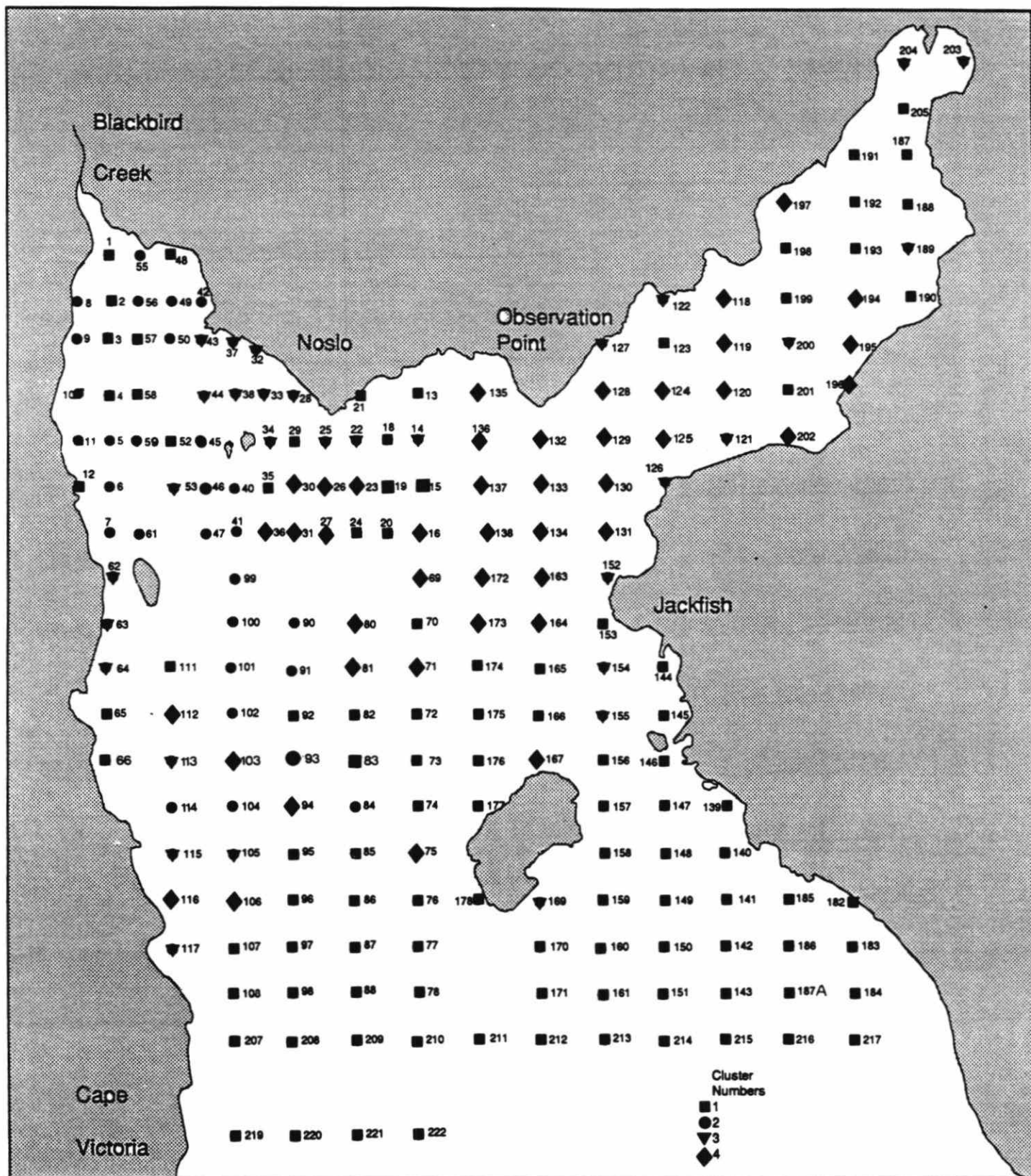


FIGURE 3.6

Benthic Community Patterns based on Cluster Analysis, 1975

TABLE 3.5: KEY BENTHIC SPECIES CHARACTERISTICS OF STATION CLUSTERS, 1975

Species	Mean Log (Density + 1)			
	Cluster 1 n = 102	Cluster 2 n = 29	Cluster 3 n = 31	Cluster 4 n = 43
<u>Aulodrilus americanus</u>	0	0	0.03481	0
<u>Rhyacodrilus montana</u>	0.13729	0.26995	0.23470	1.17104
<u>Tubifex tubifex</u>	0.17725	1.76905	0.09308	0.34916
<u>Stylodrilus heringianus</u>	0.16521	0.68334	1.43728	0.28693
<u>Hyalella azteca</u>	0	0	0.04049	0
<u>Lirceus lineatus</u>	0	0	0.16924	0.01400
<u>Valvata tricarinata</u>	0	0	0.00991	0
<u>Amnicola limosa</u>	0	0	0.04452	0
<u>Dicrotendipes</u> sp.	0	0	0.01942	0.01110

TABLE 3.6: BIOTIC INDEX CHARACTERISTICS OF STATION CLUSTERS, 1975

Biotic Index	Mean Index Values			
	Cluster 1 n = 102	Cluster 2 n = 29	Cluster 3 n = 31	Cluster 4 n = 43
No. of Taxa	2.63	5.28	7.32	6.09
Diversity (H)	0.93	1.33	1.34	1.88
Richness (R)	1.20	0.94	1.53	1.46
Tubificid Density ¹	2.47	156.69	8.35	19.37
Percent Tubificids	20.78	79.06	7.82	54.02
Total Density ¹	12	200	110	36

¹ no./0.05 m²

TABLE 3.7: SEDIMENT CHEMICAL CHARACTERISTICS OF STATION CLUSTERS, 1975

Chemical Parameter	Units	Mean* (Standard Deviation)			
		Cluster 1 n = 19	Cluster 2 n = 6	Cluster 3 n = 7	Cluster 4 n = 15
Cu	ug/g	24.12	31.33	14.17	21.90
Ni	ug/g	20.74	23.17	19.57	19.40
Pb	ug/g	35.79	12.08	3.36	13.87
Zn	ug/g	68.74	61.83	40.86	57.13
Fe	mg/g	21.06	23.62	20.47	19.37
Mn	ug/g	462.63	418.33	290.00	445.33
As	ug/g	3.13	3.73	3.09	3.14
Cd	ug/g	0.31	0.43	0.10	0.28
Hg	ug/g	0.05	0.04	0.18	0.42
LOI		3.66	4.00	2.60	3.04
TKN	mg/g	0.78	1.01	0.39	0.72
P	mg/g	0.79	0.92	0.62	0.88
COD	mg/g	34.13	57.00	14.93	32.13

* Means are based on samples which had all parameters measured.

240/m²). At stations in Jackfish Bay and Tunnel Bay, this low diversity and density is probably attributed to habitat limitations and extreme oligotrophy. Thus, 1975 Cluster 1 is similar to 1969 Cluster 1 in describing both a zone of severe impairment near the mouth of Blackbird Creek, and a deepwater oligotrophic zone.

In the 1969 survey, tubificids in the outer Jackfish Bay-inner Moberly Bay cluster were found to comprise 13% of the community. This percentage increased in 1975 to 21%. These data may suggest that the mill effects in 1975 may be extending further into Jackfish Bay than observed in 1969.

Cluster 2 stations were associated most strongly with Moberly Bay and the western half of inner Jackfish Bay, and were characterized by the highest densities of T. tubifex (mean density of 1,160/m²). This was a medium diversity, oligochaete-dominated assemblage, probably influenced by mill inputs, and appears to be similar to Cluster 2 in 1969 in defining a zone of organic enrichment. Contrary to the results of 1969, there was only a meager population of Pontoporeia hoyi located in the western half of inner Jackfish Bay and practically none in Moberly Bay. The biological community structure of Cluster 2 stations implies that the zone of enrichment is radiating out from Moberly Bay to stations as far south as St. Patrick Island. The most noticeable effects of this are along the western side of Jackfish Bay, where the highest levels of Kjeldahl nitrogen, loss on ignition, chemical oxygen demand, Cu, Ni, Fe, As, Cd and P were found. The high concentrations of these parameters are associated with the high concentrations of organic matter deposited in the western region of Jackfish Bay.

Cluster 3 stations were found primarily in the northeast region of Moberly Bay, with a few scattered stations located around the shorelines of Tunnel Bay and inner Jackfish Bay. These stations were distinguished by the highest standing crop of S. heringianus and also by a diverse assemblage of other species. The types of bottom fauna associated with Cluster 3 stations are indicative of a healthy biological community, indicating relatively unimpaired conditions in these areas. The compliment of gastropod species (Valvata tricarinata, Amnicola limosa), amphipods (Hyaella azteca) and isopods (Lirceus lineatus) indicate the presence of CPOM which was likely contributed by vegetation associated with some of these stations. Aulodrilus americanus, a tubificid typical of mesotrophic rather than eutrophic conditions (Howmiller and Beeton, 1970), was distinctive of only this cluster. The assemblage of species characteristic of these stations suggest that mill effluent may have influenced the community structure in the

northeast region of Moberly Bay; however, impact of the effluent has demonstrated very little effect on the faunal communities of Tunnel Bay.

Cluster 4 stations were located in the northeast region of inner Jackfish Bay and extended east into Tunnel Bay. These stations were distinguished by the highest densities of Rhyacodrilus montana, an oligochaete species indicative of oligotrophic conditions (Howmiller and Scott, 1977). The presence of this species in moderate densities suggests only a slight impairment of water quality at these stations; however, the presence of T. tubifex, Dicrotendipes sp. and Lirceus lineatus implies some degree of organic enrichment.

Discriminant analysis (Figure 3.7) suggests that fine material is again an important environmental factor influencing stations in the northeast region of Moberly Bay, as in 1969. However, water depth and vegetation assume greater importance in 1975 as predictors of cluster membership. Again, this discriminant model, based on a limited number of substrate features recorded in the field, is not a complete representation of Jackfish Bay community ecology, correctly predicting cluster membership of only 25% of stations. Standardized discriminant function coefficients are listed in Table A2.13, Appendix 2. The discriminant model based on sediment chemical measurements was only slightly better, correctly classifying 36% of stations, primarily in terms of Cu, Pb, Hg, Zn and COD (Table A2.12, Appendix 2).

3.3 1987 Survey

In 1987, biotic indexes (Table 3.8) were related to the presence of vegetation, and several sediment quality parameters - organic matter, odour, fine texture, oil, phosphorus and Hg. Number of taxa and diversity were positively related to vegetation, while diversity and richness were negatively related to odour. As discussed earlier, aquatic vegetation provides a diversity of habitat that favours the development of a diverse benthic community. A negative relationship between diversity and sediment odour reflects the effects of anoxic sediments on the benthic community. Tubificid density was positively related to organic matter, odour and oil, while percent tubificids were positively related to odour, oil and fines. The positive relationship between tubificid abundance/dominance and these characteristics is consistent with preference of many tubificids for organic enrichment. An oil spill apparently occurred in Jackfish Bay between 1975 and 1987, and was particularly evident at Station 100 where only a few tubificids were present.

FIGURE 3.7

Territorial Map showing Distribution of Jackfish Bay Benthic Station Clusters along Two Discriminant Functions based on Sediment Quality, 1975

Numbers 1-4 refer to cluster membership.

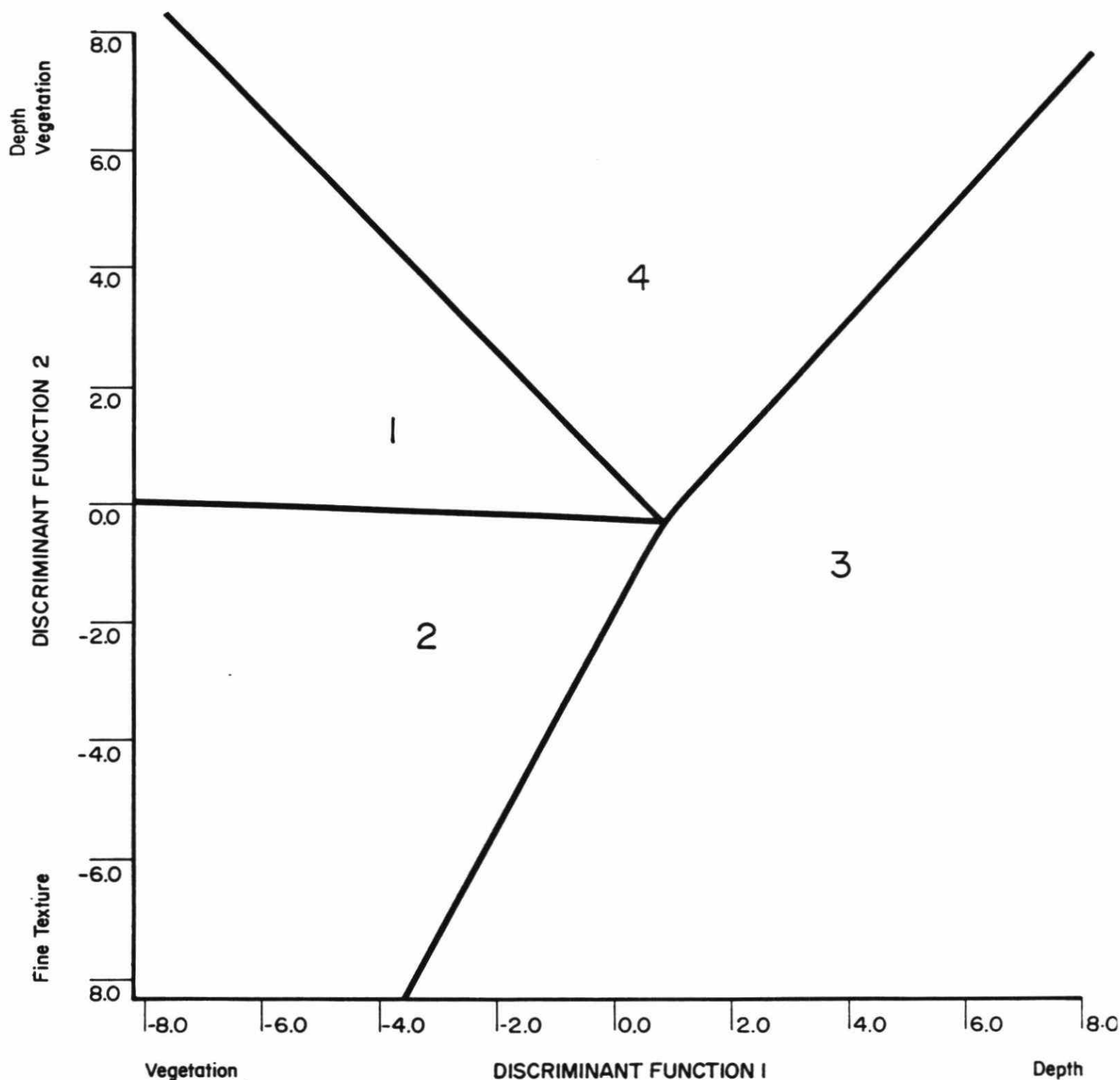
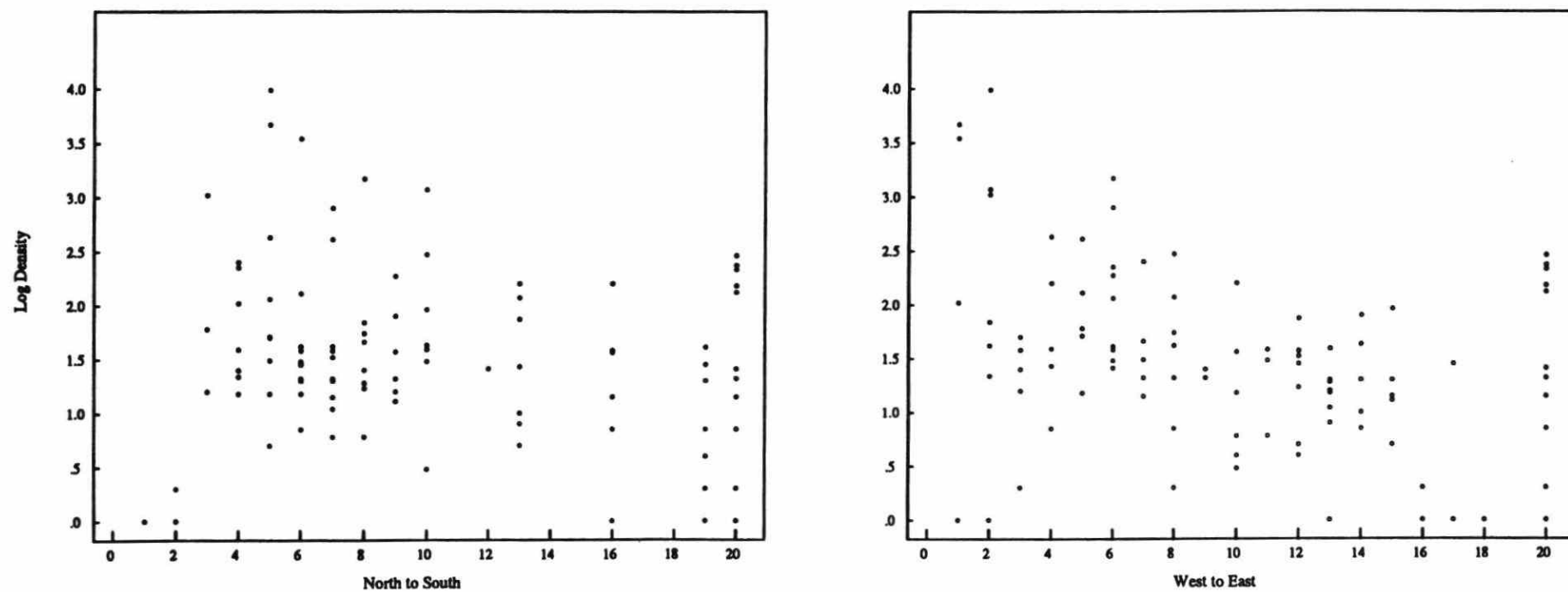


TABLE 3.8: BIOTIC INDEX ASSOCIATIONS WITH SUBSTRATE FACTORS, 1987

Biotic Index	Association Measure	Substrate Factor				
		Vegetation	Organic	Odour	Oil	Fines
No. of Taxa	Chi-square (df) Tau C	101.00 (10) 0.115	* *		* *	* *
Diversity (H)	Chi-square (df) Tau C	74.98 (7) 0.114	* *	19.65 (7) -0.115	* *	* *
Richness (R)	Chi-square (df) Tau C	* *	* *	23.15 (7) -0.167	* *	* *
Tubificid Density	Chi-square (df) Tau C	* *	71.35 (28) 0.297	38.45 (7) 0.224	18.82 (7) 0.253	* *
Percent Tubificids	Chi-square (df) Tau C	36.08 (9) -0.087	* *	21.43 (9) 0.172	22.43 (9) 0.337	96.17 (72) 0.269

Biotic Index	Association Measure	Substrate Factor		
		Hg	P	TKN
Richness (R)	Pearson's r	-0.483	*	*
Percent Tubificids	Pearson's r	*	0.594	0.681

FIGURE 3.8: TOTAL ORGANISM DENSITY IN RELATION TO TRANSECT ORDER, 1987



Tunnel Bay is Transect 20 North 20 West.

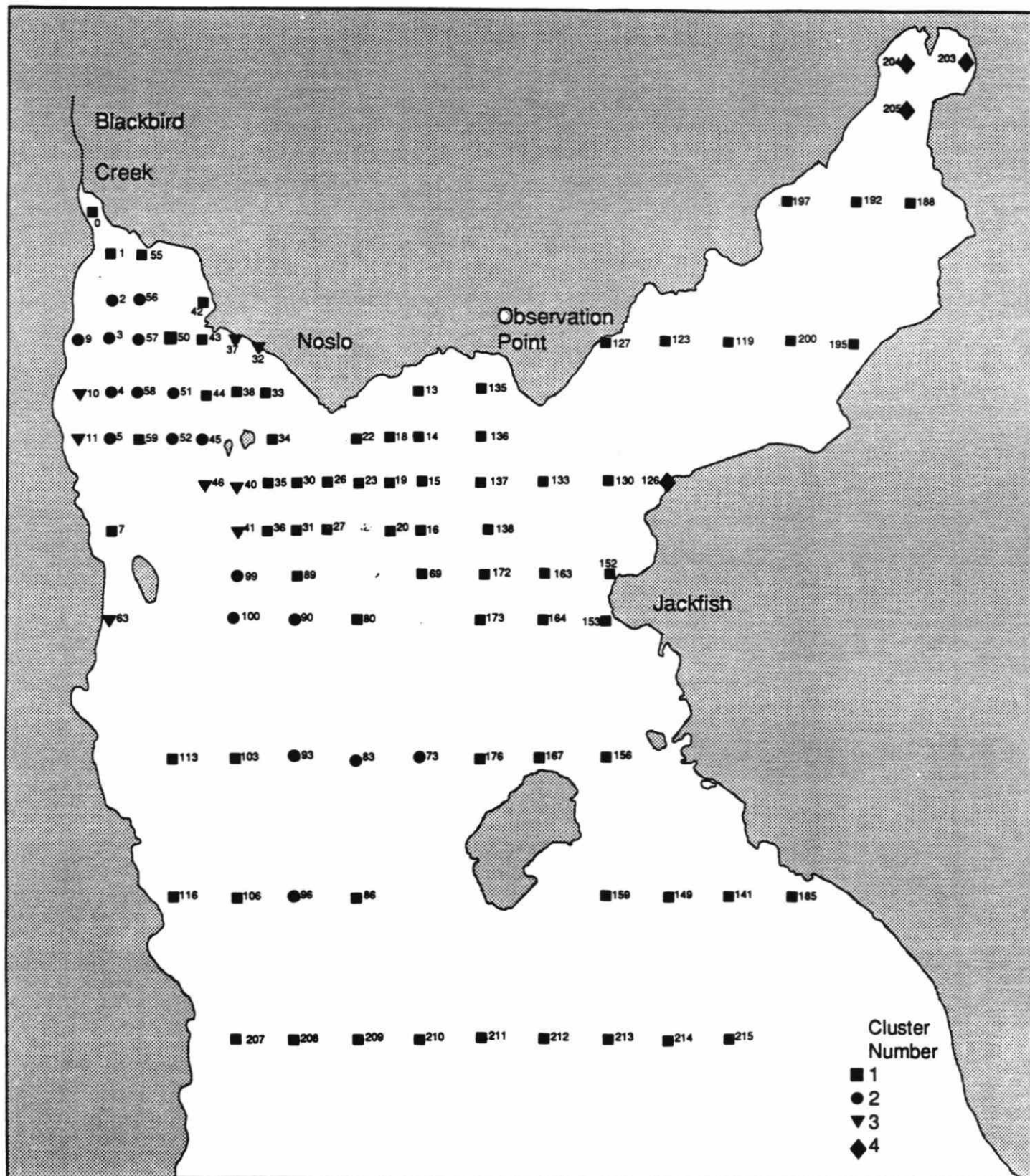


FIGURE 3.9 **Benthic Community Patterns based on Cluster Analysis, 1987**

TABLE 3.9: KEY BENTHIC SPECIES CHARACTERISTICS OF STATION CLUSTERS, 1987

Species	Mean Log (Density + 1)			
	Cluster 1 n = 71	Cluster 2 n = 18	Cluster 3 n = 8	Cluster 4 n = 4
Acarina	0.00424	0	0.03763	0.34505
<u>Arcteonais lomondi</u>	0	0	0.30270	0
<u>Specaria josinae</u>	0	0	0.07526	0
<u>Uncinais uncinata</u>	0.00848	0	0	0.15051
<u>A. americanus</u>	0	0	0	0.11928
<u>T. tubifex</u>	0.21260	1.89999	2.31795	0.11928
<u>Sparganophilus</u> sp.	0	0	0	0.07526
<u>L. lineatus</u>	0.01272	0.01672	0	1.44540
<u>Chironomus</u> sp.	0.03825	0	0	0.68430
<u>Stictochironomus</u> sp.	0.03796	0	0	0.53497

Species richness was negatively related to Hg concentration, and percent tubificids was positively related to phosphorus and Kjeldahl nitrogen. No other correlations with sediment chemistry were evident. The general lack of evidence for sediment chemistry influence on biotic indexes in 1987 as compared to 1975 probably reflects the small set of benthic stations for which sediment chemistry data were available in 1987.

Total organism density in 1987 is shown in Figure 3.8, in relation to north-south and west-east transect order. As in 1975, a slight density depression near the mouth of Blackbird Creek in Moberly Bay and total extinction of benthic fauna at the mouth of Blackbird Creek was suggested, with higher densities toward the middle of the bay. A density decrease from west to east across the bay was also apparent, reflecting the positive effect of organic enrichment on benthic density and the general southward dispersion of the effluent plume along the western coastline.

Figure 3.9 illustrates the pattern of cluster membership in the 1987 benthic community. A dendrogram showing hierarchical relationships between the four station clusters is included in Figure A1.6, Appendix 1. The characteristic species which distinguish each cluster are listed in Table 3.9. Biotic index characteristics of each cluster are listed in Table 3.10. Sediment chemical characteristics of each cluster are listed in Table 3.11.

Cluster 1 stations occurred primarily in Tunnel Bay and Jackfish Bay, but also included stations in Moberly Bay near the mouth of Blackbird Creek and along the eastern shoreline. This cluster is characterized by the lowest total organism and tubificid densities, and a relatively low diversity (Table 3.10). Characteristic species within Cluster 1 include T. tubifex (although at low densities), amphipods (L. lineatus) and chironomids (Chironomus and Stictochironomus) (Table 3.9). As in 1969 and 1975, this cluster includes both a low density, oligotrophic group and a low density group resulting from severe environmental impairment at the mouth of Blackbird Creek. The trend toward an increasing tubificid component in the lowest density cluster from 1969 to 1975 (13 to 21%) continued in 1987, with an average of 48%.

Cluster 2 stations extended from central and outer Moberly Bay into Jackfish Bay, and were characterized by high tubificid densities and the lowest diversity of all station groups (0.43). The mean tubificid density of 695/station ($13,900/m^2$) was higher than observed in any cluster in other years, but is lower than the mean density in Cluster 3

TABLE 3.10: BIOTIC INDEX CHARACTERISTICS OF STATION CLUSTERS, 1987

Biotic Index	Index Mean Value			
	Cluster 1 n = 71	Cluster 2 n = 18	Cluster 3 n = 8	Cluster 4 n = 4
No. of Taxa	4.07	2.39	6.38	23.75
Diversity (H)	1.23	0.43	1.59	3.39
Richness (R)	1.21	0.35	0.88	4.22
Tubificid Density ¹	12.44	695	1,511	32.25
Percent Tubificids	47.89	96.67	89.00	13.06
Total Density ¹	26	720	1,700	250

¹ no./0.05 m²

TABLE 3.11: SEDIMENT CHEMICAL CHARACTERISTICS OF STATION CLUSTERS, 1987

Chemical Parameter	Units	Mean			
		Cluster 1 n = 30	Cluster 2 n = 8	Cluster 3 n = 1	Cluster 4 n = 0
Cu	ug/g	31.71	26.50	33	-
Ni	ug/g	21.95	20.38	13	-
Pb	ug/g	20.63	14.50	10	-
Zn	ug/g	65.30	51.63	38	-
LOI ¹	mg/g	46.53	92.25	30	-
Fe ²	mg/g	19.69	23.0	15.0	-
Mn	ug/g	699.2	566.3	260	-
P ²	mg/g	0.72	0.77	0.83	-
TKN ³	mg/g	0.76	2.15	1.10	-
Al ²	mg/g	12.2	12.8	7.3	-
As	ug/g	4.75	4.03	2.70	-
Cd	ug/g	0.61	0.10	0.10	-
Co	ug/g	11.31	12.29	8.60	-
Hg	ug/g	0.07	0.16	0.08	-
K	ug/g	2,219	2,150	1,300	-
V	ug/g	48.44	49.25	38	-

¹ Sample sizes are 7, 4 and 1 for Clusters 1, 2 and 3, respectively.

² Sample sizes are 16, 4 and 1 for Clusters 1, 2 and 3, respectively.

³ Sample sizes are 17, 4 and 1 for Clusters 1, 2 and 3, respectively.

stations in 1987. The high densities and low diversity of Cluster 2 characterize conditions of organic enrichment beginning just beyond the zone of severe impairment near the mouth of Blackbird Creek.

Cluster 3 stations were associated with Moberly Bay and the western portion of inner Jackfish Bay, and were characterized by the highest of tubificid densities of all clusters and all years (average of 1,511/sample, or 30,200/m²). A few naidids were also characteristic of this cluster (Table 3.9), but were not abundant. This cluster is characteristic of zones of severe organic enrichment. Tubificid densities of 30,200/m² (maximum of 196,000/m²) are high, and are much greater than the maximum of 8,100/m² found by Vander Wal (1977) at the most impacted Nipigon Bay station. This tubificid density range is not as high as those found in the Kaministiquia River in Thunder Bay (BEAK, 1987), but is nonetheless extreme, and comparable to the density ranges found in the late 1960's and early 1970's in organically-enriched Toronto Harbour (Brinkhurst, 1970).

The occurrence of two clusters (Clusters 2 and 3) describing areas of organic enrichment is unique to 1987, as only one cluster of this type was defined in each of the earlier surveys. While both clusters are indicative of organic enrichment, Cluster 2 is characterized by fewer tubificids and the presence of amphipods (L. lineatus), while Cluster 3 is characterized by greater tubificid numbers and the presence of naidids (Arcteonais lomondi and Specaria josinae). The 1987 condition appears to indicate increased and perhaps more widespread organic enrichment of Moberly Bay and western Jackfish Bay.

Cluster 4 stations, which occurred only at the head of Tunnel Bay and at one location near the southeastern end of Tunnel Bay, had low tubificid densities, although still high for Lake Superior (average of 32.3/sample or 650/m²), and a relatively large variety of other taxa, including chironomids (Chironomus and Stictochironomus), amphipods (L. lineatus), water mites (Acarina), and naidids (Uncinaiis uncinata). The mean density of T. tubifex was low (mean of 6/m²), while Aulodrilus americanus, a tubificid preferring mesotrophic rather than eutrophic conditions (Howmiller and Beeton, 1970), was equally abundant in this cluster, indicating unenriched conditions relative to Clusters 2 and 3 stations, but probably more productive conditions than at Cluster 1 stations.

Discriminant analysis (Figure 3.10) shows water depth and vegetation to be key environmental factors influencing the benthic community, with Cluster 4 stations separating from the others primarily on this environmental gradient. Oil, and to some extent odour and fines, distinguish Cluster 2 stations from the others. These stations have high tubificid densities. While this discriminant model is based on a limited number of substrate features, it correctly predicts cluster membership of 75% of stations. Standardized discriminant function coefficients are listed in Table A2.13, Appendix 2.

3.4 Long-term Trends

In evaluating the 1969, 1975 and 1985 benthic community data, some environmental conditions appear to be relatively constant, while others show progressive change.

A zone of severe environmental impairment, as evidenced by a complete absence of benthic organisms or very low benthic densities, was found during each survey in Moberly Bay near the mouth of Blackbird Creek. While other stations, primarily deepwater stations in outer Jackfish Bay, also showed very low densities, this condition was judged to be attributed to natural unproductive conditions and a low diversity of habitat. The paucity of organisms near the mouth of Blackbird Creek appears to be attributed either to toxicity or to loss of habitat due to fibre deposition. This zone covers an area of about 0.2 to 0.3 km, and was relatively constant in size in all survey years.

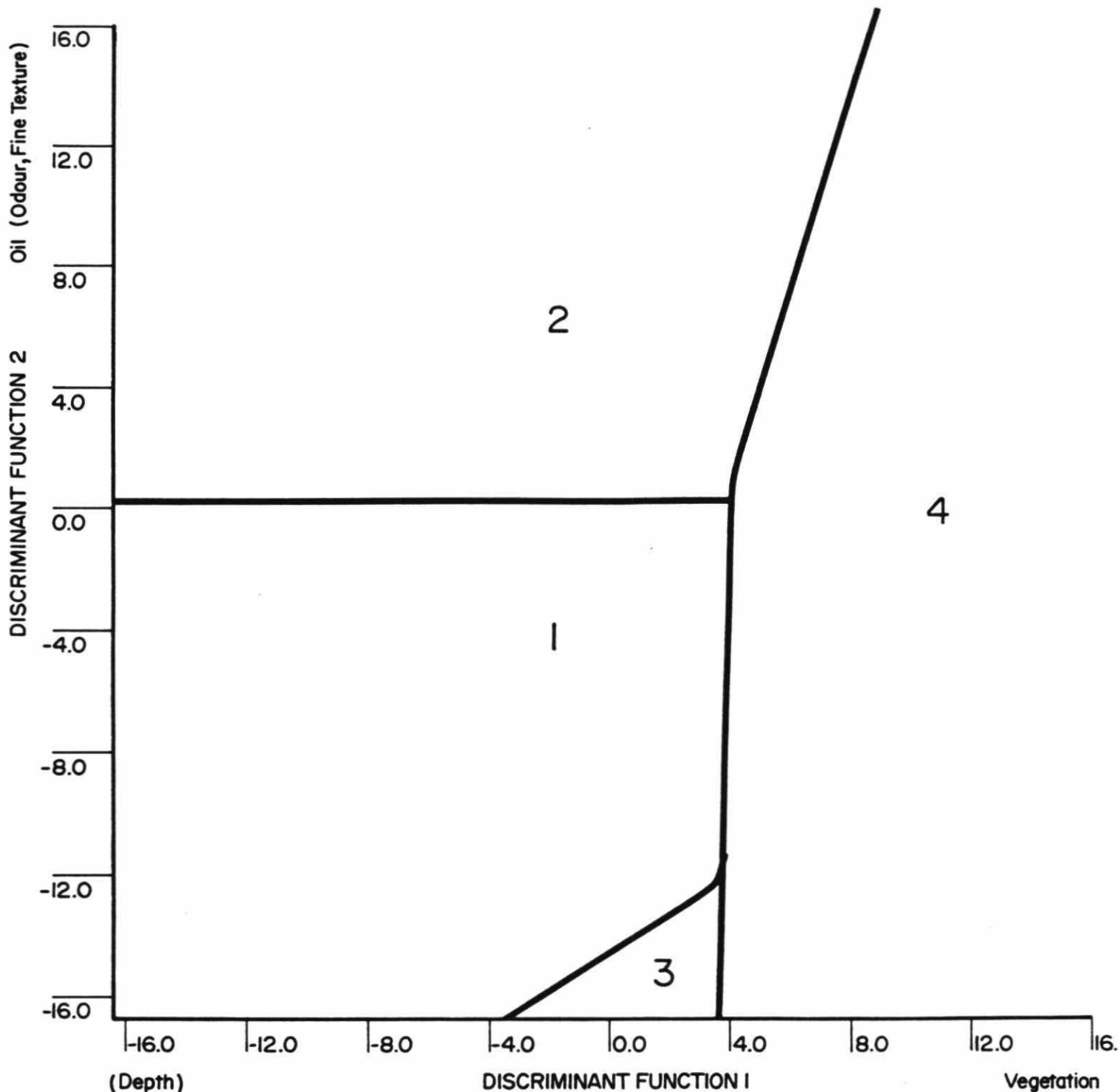
The zone of heavy organic enrichment, described by Cluster 2 in 1969 and 1975 and by Clusters 2 and 3 in 1987, appears to have increased in extent from 1969 (extending only to the Cody Island area) to locations to the west of St. Patrick Island in 1975 and 1987 (Figures 3.3, 3.6 and 3.9). This increase in the zone of enrichment does not correspond with a substantial change in suspended solids or BOD₅ loadings from Kimberly-Clark Limited (Appendix 2), and may represent the cumulative effects of mill discharges over time.

Perhaps the most dramatic trend is seen in the changing distribution of P. hoyi over time. As seen in other benthic surveys, P. hoyi is sensitive to the effects of pulp and paper effluents, and may be suppressed for considerable distances from effluent sources (e.g., Vander Wal, 1977; MOE, 1979).

FIGURE 3.10

Territorial Map showing Distribution of Jackfish Bay Benthic Station Clusters along Two Discriminant Functions based on Sediment Quality, 1987

Numbers 1-4 refer to cluster membership.



In 1969, P. hoyi was essentially absent from central and western Moberly Bay and a few locations in the western portion of inner Jackfish Bay; however, P. hoyi was found at eight stations along the eastern shoreline of Moberly Bay (Figure 3.11). Densities tended to be high (in the range of 11 to 50/sample, or 220 to 1,000/m²) in Tunnel Bay and somewhat lower in the central and eastern portions of inner Jackfish Bay and in outer Jackfish Bay.

In 1975, the zone where no P. hoyi were found covered Moberly Bay, with the exception of stations in the extreme southeast, most of the western portion of inner Jackfish Bay and several stations in outer Jackfish Bay (Figure 3.12). Pontoporeia remained more abundant in Tunnel Bay than in any other region, as in 1969, although there was an increase in the fraction of stations in the low density category (1 to 10/sample, or 20 to 200/m²), and a decrease in the fraction belonging to the high density category (26 to 50/sample, or 520 to 1,000/m²). The overall density decline also applies to inner and outer Jackfish Bay.

This progressive decline in P. hoyi continued in 1987 (Figure 3.13), with none occurring at the majority of stations, including all of Moberly Bay and all of the western portion of Jackfish Bay. Densities in Tunnel Bay also continued to decline, with no Pontoporeia occurring at a few stations for the first time. Substantial declines were also evident throughout eastern and central portions of Jackfish Bay.

Maps showing the zonation of tubificid densities demonstrate a progressive increase in both maximum density and the extent of high density zones over time (Figures 3.14 to 3.16), particularly in western Moberly Bay and western portions of inner Jackfish Bay. Maximum densities were 1,500/sample (30,000/m²) in 1969, 1,054/sample (21,000/m²) in 1975, and 9,808/sample (196,000/m²) in 1987. Only one station supported densities in excess of 1,000/sample (20,000/m²) in each of the 1969 and 1975 surveys, while seven stations fell into this density category in 1987. A density of 196,000/m² is extreme, and is comparable to the highest densities found in heavily polluted Toronto Harbour in the late 1960's and early 1970's (Brinkhurst, 1970). This increase in tubificid densities is also evident in the mean density values given for organically enriched clusters in 1969, 1975 and 1987, and is further demonstrated by the increase from one cluster characterizing zones of enrichment in 1969 and 1975 to two such clusters in 1987 (Tables 3.3, 3.6 and 3.10). Similar and even higher densities (up to 1.1 million/m²) of tubificids have been

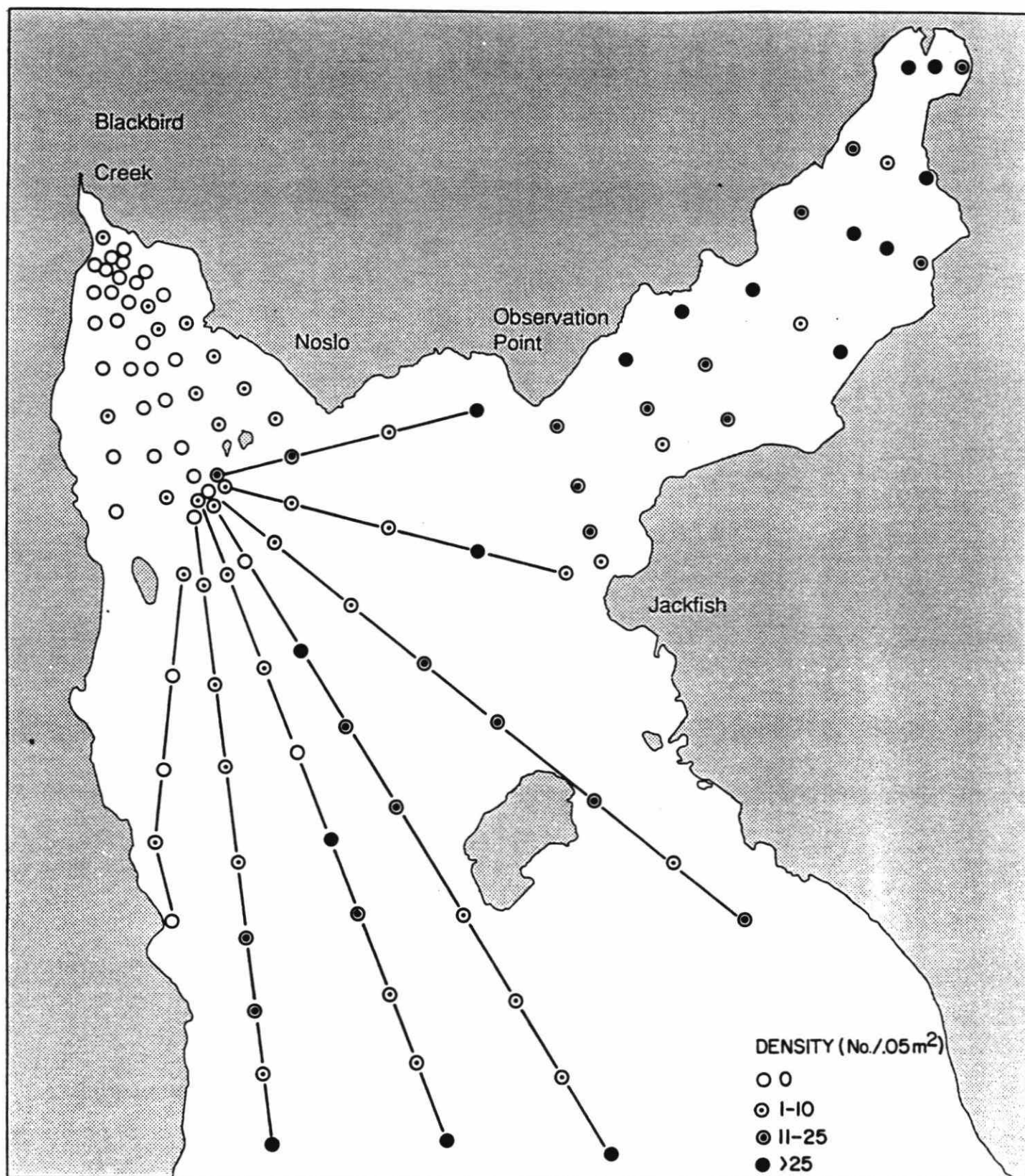


Figure 3.11 Distribution of *Pontoporeia hoyi*, 1969

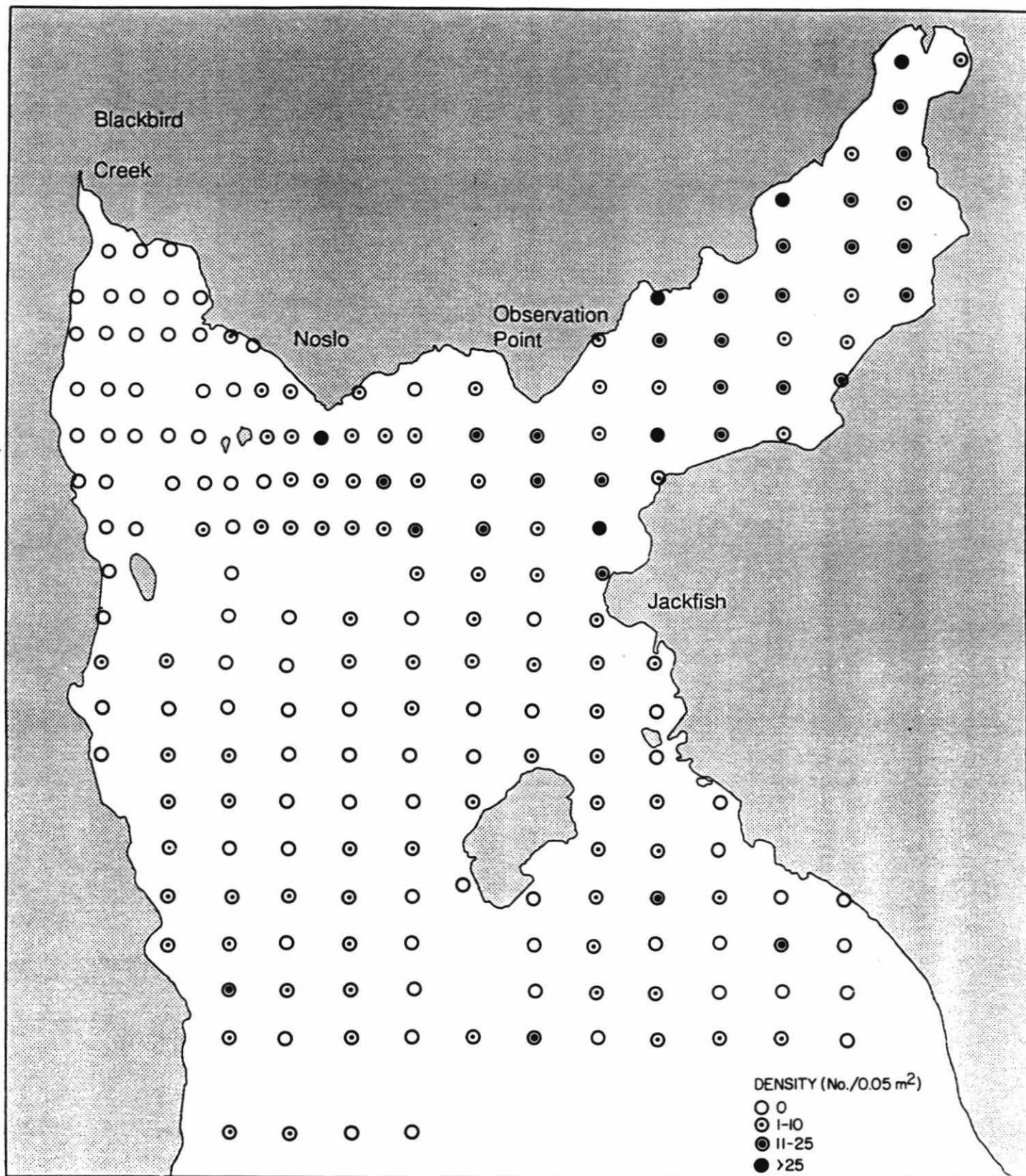


Figure 3.12 Distribution of *Pontoporeia hoyi*, 1975

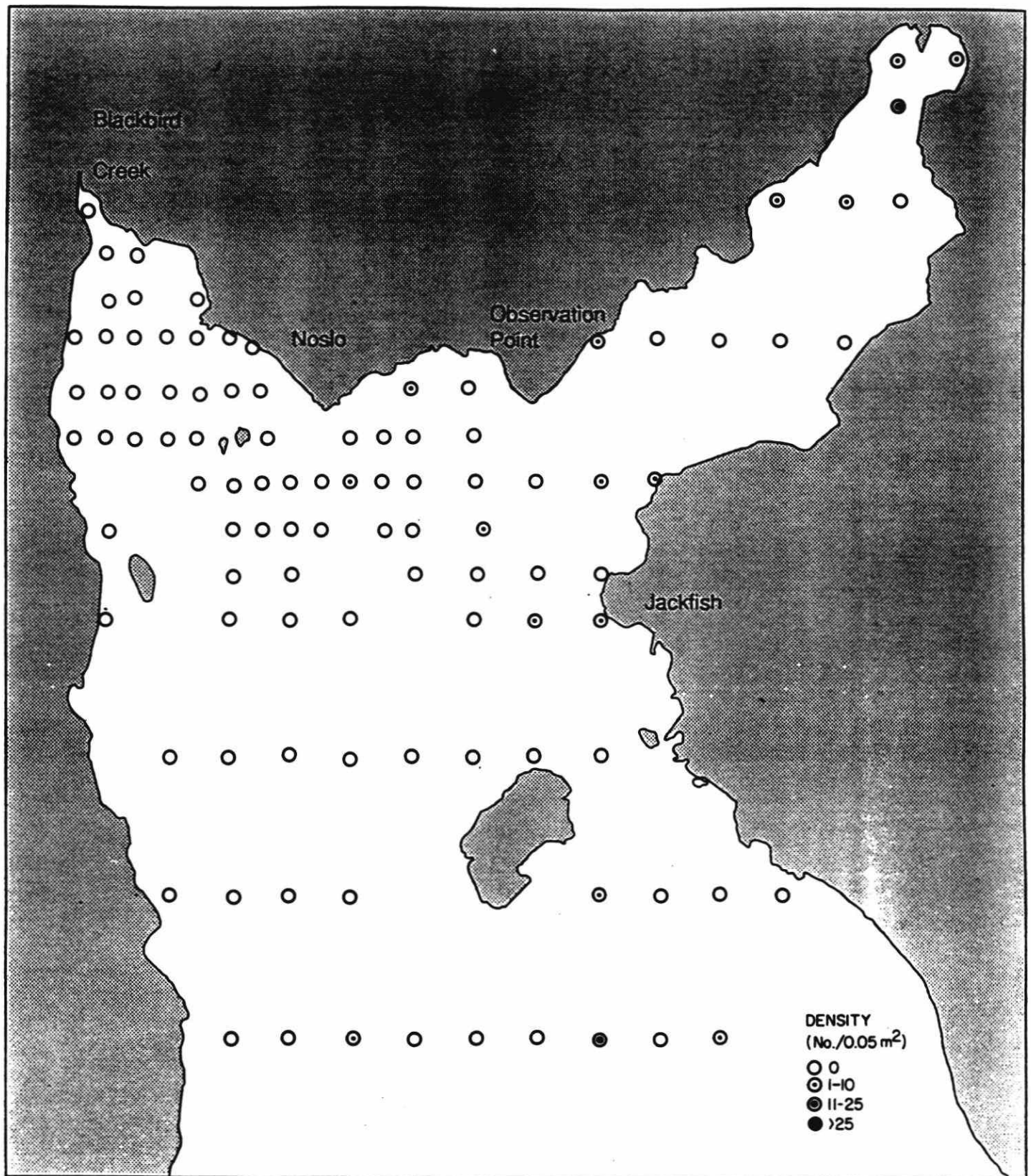


Figure 3.13 Distribution of *Pontoporeia hoyi*, 1987

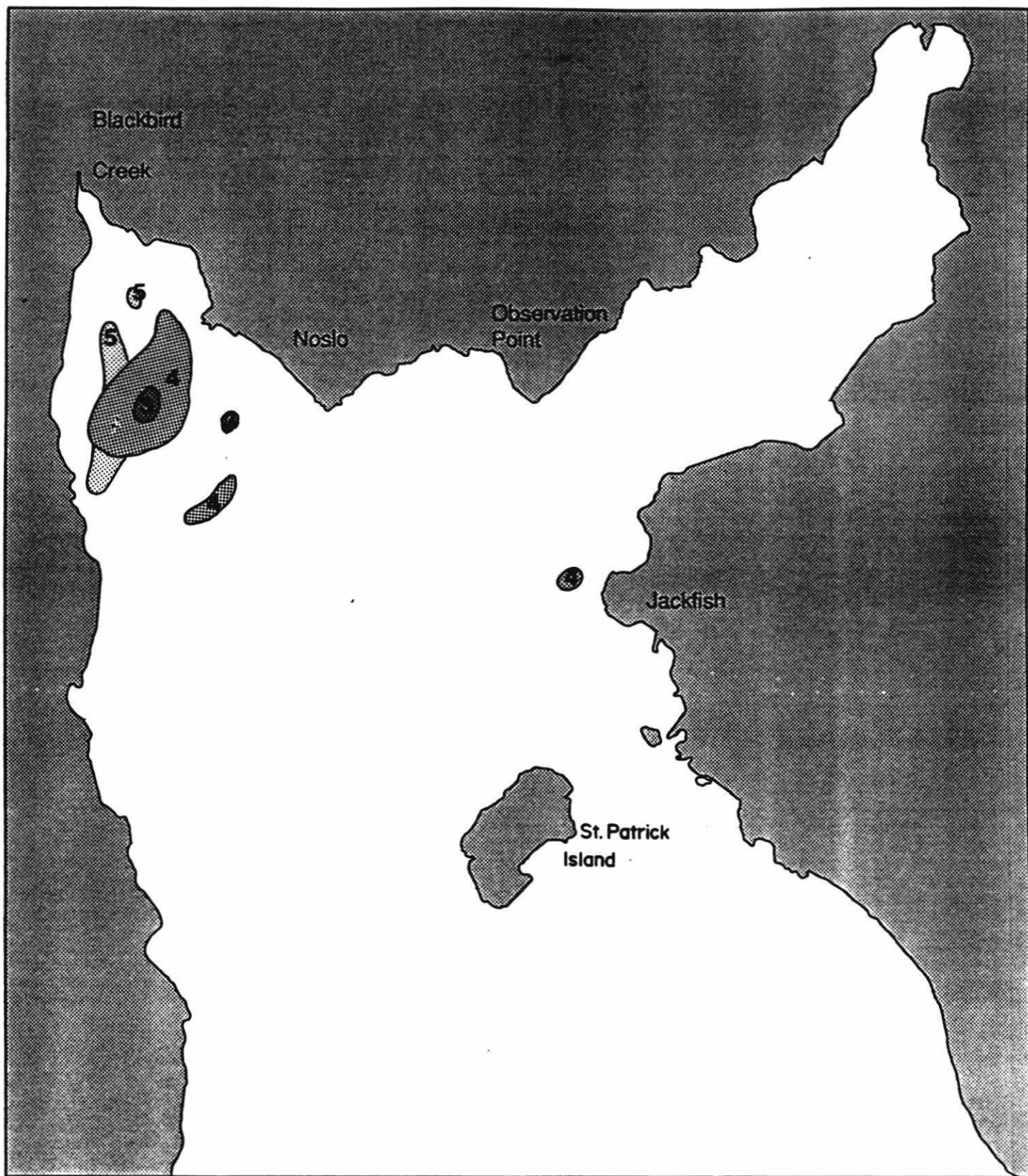


FIGURE 3.14
Tubificid Density Zones, 1969

TUBIFICID DENSITY (No./m ²)	
1	>100 000
2	50 000-100 000
3	10 000-50 000
4	2 000-10 000
5	1 000-2 000

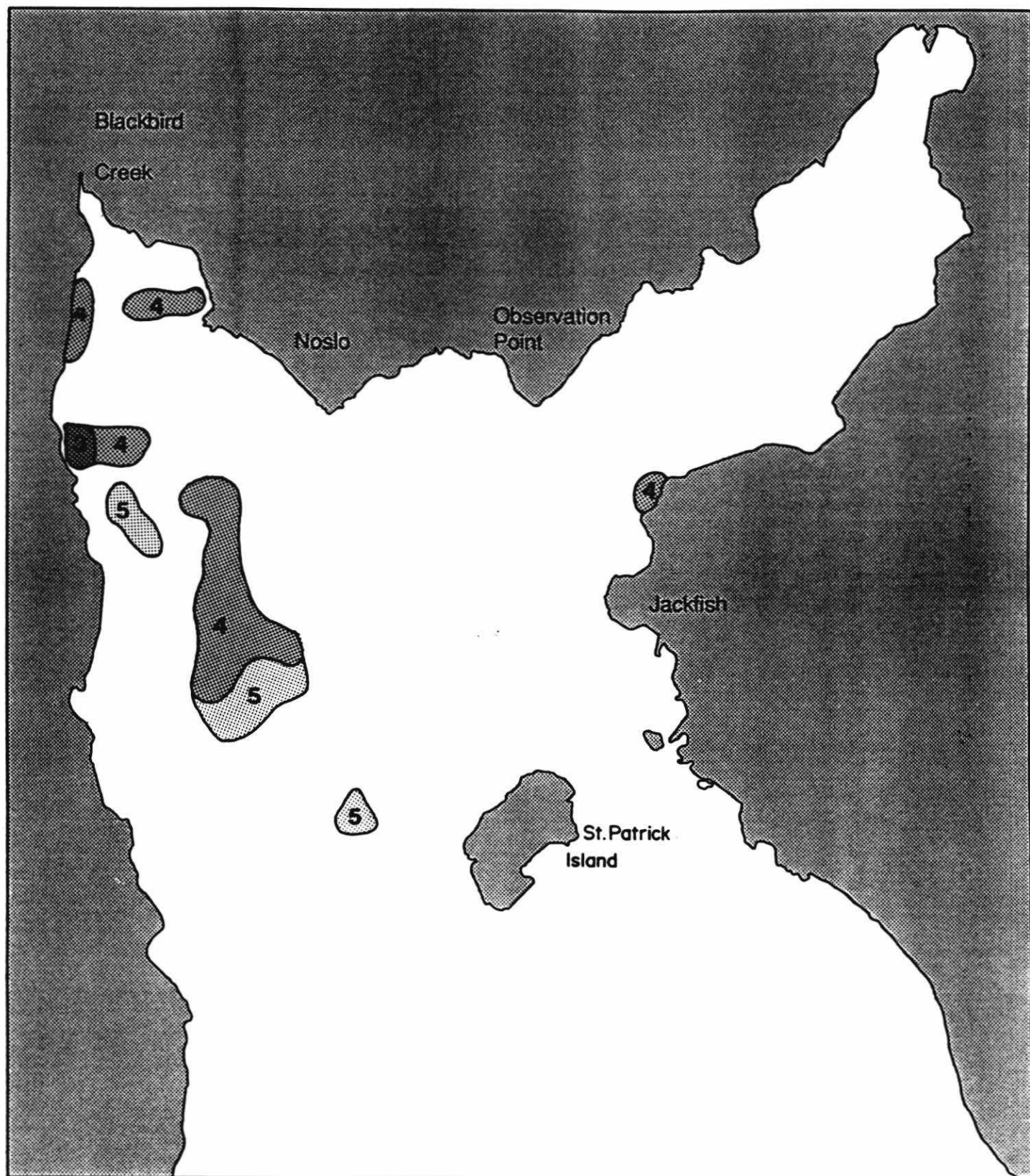


FIGURE 3.15
Tubificid Density Zones, 1975

TUBIFICID DENSITY (No./m ²)			
1	>100 000	3	10 000-50 000
2	50 000-100 000	4	2 000-10 000
		5	1 000-2 000

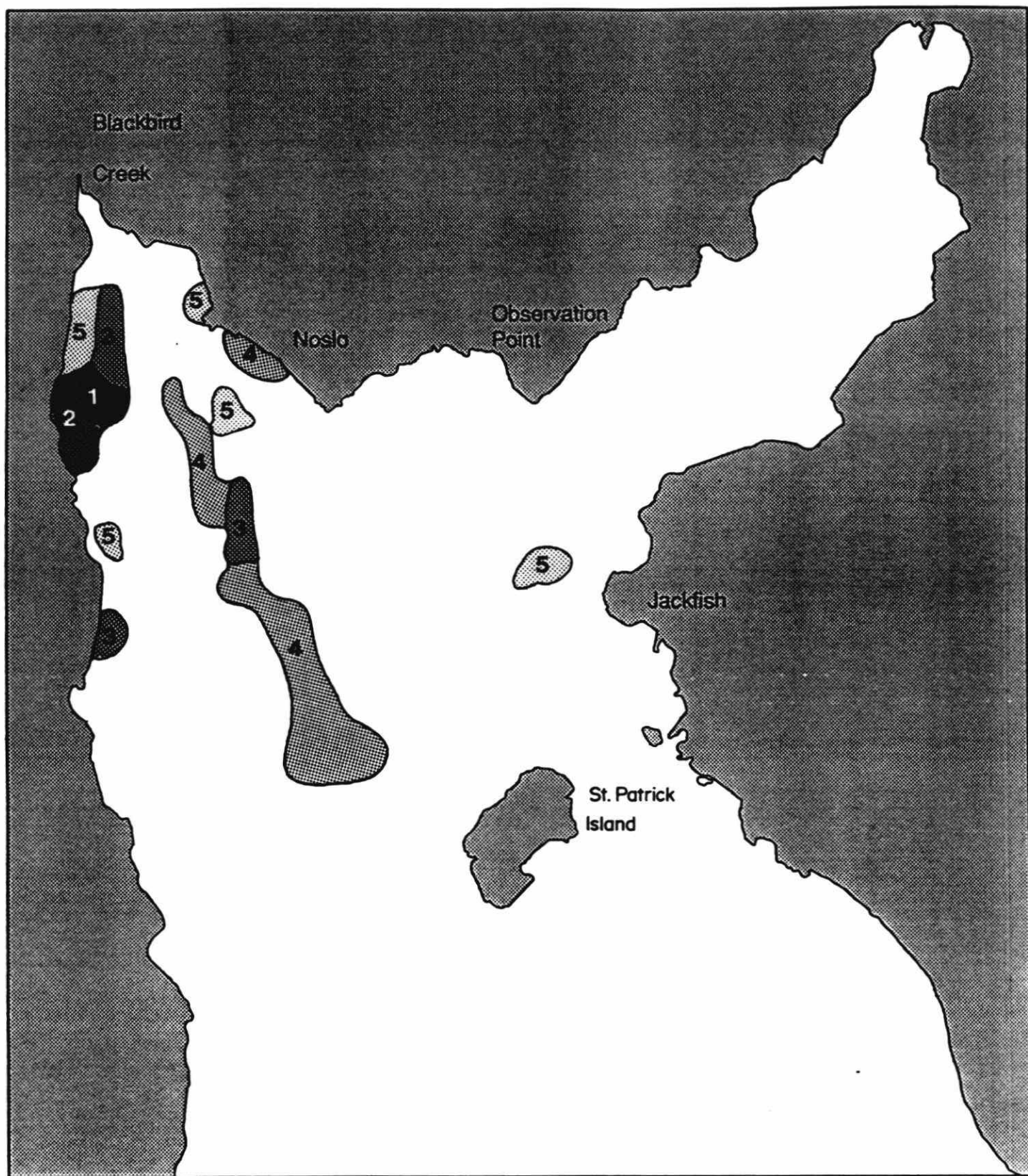
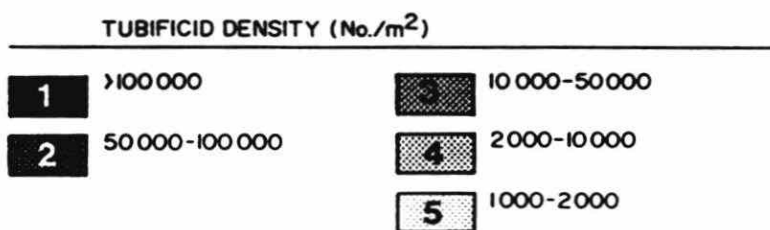


FIGURE 3.16
Tubificid Density Zones, 1987



observed in the Kaministiquia River downstream of pulp and paper operations at Thunder Bay (BEAK, 1987). At Nipigon Bay, maximum oligochaete densities observed by Vander Wal (1977) at enriched locations were considerably lower at 8,100/m².

This apparent progressive enrichment of Jackfish Bay may be, in part, due to an increase in organic loadings between 1969 and 1975, although loadings showed no substantial change between 1975 and 1987 (Table A2.10, Appendix 2). Thus, changes in more recent years are more likely due to the cumulative effects of organic loadings over many years. Thus, a steady-state has not been reached, and the organic enrichment of Jackfish Bay appears to be continuing. The decline in P. hoyi in areas relatively distant from Moberly Bay is consistent with a gradual accumulation of organic matter throughout the bay through the effects of water circulation. This contention is further supported by the observation that tubificid densities increased in all community clusters in 1987 (Tables 3.3, 3.6 and 3.10). Alternately, some other ecological factor, perhaps operating at the regional level, may be contributing to these changes, particularly in Tunnel Bay and outer Jackfish Bay, although this hypothesis cannot be tested without information on other locations (new control sites) well removed from Jackfish Bay.

Inspection of Tables A2.4 to A2.6 showed no obvious temporal trends in sediment quality in Jackfish Bay, as summarized in Table 3.12. Mercury, the only parameter measured in all surveys, was one of few sediment quality parameters meeting the guidelines for open water disposal of dredged spoils (Persaud and Wilkins, 1976) at all stations. Some of the metals tended to be higher in concentration at stations with higher sediment organic levels (Table 3.7). The exceptionally high concentrations of lead and zinc in 1975 at Station 205 are unusual in that they occurred in Tunnel Bay, apparently away from major sources of contamination. This station is located near a ship wreck which may, however, represent an important local source of metal contamination.

TABLE 3.12: RANGES IN CONCENTRATIONS¹ OF SELECTED SEDIMENT QUALITY PARAMETERS, 1969, 1975 AND 1987

Parameter	Ranges			Dredging Guidelines ²
	1969	1975	1987	
Cu	-	5-59	10-62	25
Ni	-	7-37	8.4-31	25
Pb	-	L 3-94 (550)*	4.7-76	50
Zn	-	20-98 (490)*	30-150	100
As	-	0.77-9.6	0.83-1.7	8
Cd	-	L 0.1-1.0	L 0.2-1.7	1
Co	-	3-17	-	-
Hg	0.018-0.14	L 0.01-0.17	L 0.01-0.23	0.3
Cr	-	30-94	-	25
Fe (mg/g)	-	11.6-47	2.8-31	10
Loss on Ignition (%)	-	L 1-9.5	L 0.5-18	6
Total Kjeldahl-N (mg/g)	-	0.1-2.6	L 0.2-3.7	2
Total P (mg/g)	-	0.41-1.3	0.36-1.03	1
Oil and Grease	-	-	0.63-9,568	1,500

* Values in parentheses are extreme values found at Station 205 near the head of Tunnel Bay.

¹ ug/g unless otherwise indicated.

² from Persaud and Wilkins (1976).

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

1. In general, higher species diversity was associated with the presence of aquatic vegetation, while lower diversity was associated with accumulation of organic debris and the detection of an odour in the sediment. Organic accumulation and the development of anoxic conditions causing an odour in the sediments may be due to the effects of organic loadings from the Kimberly-Clark mill.
2. Total organism density from west to east generally showed a density depression in the extreme west due to the effects of mill effluent entering via Blackbird Creek, followed by a density rise to the immediate east due to the effects of organic enrichment, followed by a gradual decline to the east. This enrichment of west-central areas of Moberly Bay and Jackfish Bay is consistent with the observed pattern of dispersion of the effluent plume from Blackbird Creek.
3. Cluster analysis, carried out on quantitative benthic data using an hierarchical, agglomerative procedure, identified four distinct benthic communities in Jackfish Bay. In 1969, 1975 and 1987, one cluster consisted of two benthic subgroups - a deepwater, oligotrophic subgroup and a small subgroup near the mouth of Blackbird Creek (effluent source) apparently showing the effects of severe environmental impairment. Both subgroups showed very low benthic densities and relatively low diversities. Beyond the zone of severe impairment, one cluster identified in 1969 and 1975 and two clusters in 1987 demonstrated the effects of organic enrichment, and were strongly dominated by tubificids. The remaining clusters were generally of greater diversity and showed no obvious effects of pulp and paper discharges to the bay.
4. Cluster analysis carried out using presence-absence data only, showed no spatially coherent pattern in the benthic community in any survey, and was not evaluated further.

5. The pollution-tolerant tubificid, Tubifex tubifex, was a key benthic species discriminating benthic clusters in all years. Densities of this species were highest in the zone of organic enrichment. Other characteristic species included the pollution-intolerant amphipod, Pontoporeia hoyi, which was distinctive of unimpacted stations in 1969. Stylodrilus heringianus, a moderately intolerant lumbriculid, was distinctive of relatively unimpacted clusters in 1969 and 1975. Other common taxa included isopods, chironomids and gastropods.
6. Discriminant analysis showed that important environmental characteristics distinguishing benthic clusters were sediment particle size characteristics, depth, organic matter accumulation in the sediment and the presence of aquatic vegetation. In general, the clusters characterizing zones of organic enrichment were most often distinguished by a fine-textured sediment. The presence of oil was important in discriminating clusters in 1987, and high oil content was most associated with Cluster 2 (which characterized a zone of organic enrichment). Much of this oil apparently resulted from an unreported spill of unknown origin between 1975 and 1987.
7. Densities of Pontoporeia hoyi, a species recognized to be intolerant of the effects of pulp and paper effluent, dramatically declined from 1969 to 1975 and from 1975 to 1987. Pontoporeia completely disappeared from Moberly Bay, and declined in all other areas of Jackfish Bay, including Tunnel Bay. There was a concurrent increase in the densities of pollution-tolerant tubificids, particularly in Moberly Bay and western and central portions of Jackfish Bay. These biological trends suggest a gradual enrichment of Jackfish Bay, possibly due to the cumulative effects of organic loadings.
8. Long-term trends in sediment quality conditions are not apparent. Mercury levels were relatively low in all surveys. Several other metals occurred at concentrations above the provincial guidelines for open water disposal of dredge spoils at some stations in both 1975 and 1987. These metals were not measured in 1969.

4.2 Recommendations

1. Because the biological community of Jackfish Bay is demonstrating the effects of organic enrichment over time, it is recommended that a benthic survey be repeated in approximately five years.
2. If possible, additional control stations should be established in areas well removed from Jackfish Bay and the effects of pulp and paper effluents, because Tunnel Bay (the existing control area) appears to be showing the effects of organic enrichment.
3. Use of a smaller mesh size than U.S. No. 24 (0.65 mm) should be considered for future surveys. The larger mesh size used in previous surveys may be expected to lose smaller organisms such as early instar chironomids, nematodes, naidids and the small oligotrophic tubificid Phallodrilus hallae, which could be useful in demonstrating biological differences between the most impaired stations near the mouth of Blackbird Creek, and deepwater, oligotrophic stations in Jackfish Bay. The effect of mesh size on the estimation of benthic density is documented by Duffy and Batterson (1987) and Burt et al. (1988). The benefits of switching to a smaller mesh size should, however, be carefully weighed against the need for maintaining comparability with earlier databases.
4. Use of microscopic examination should be considered for the sorting of benthic samples, particularly if a smaller mesh size is used to wash the samples. Our experience has shown that significantly fewer organisms are recovered from samples sorted by naked eye than those sorted with the aid of a microscope (Burt et al., 1988). In addition, the enumeration of oligochaetes is more accurate since fragmented head and tail sections may be easily distinguished.

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APPENDIX 1

Biological Results

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	A1 273	A2 274	A3 275	A4 276	A5 277	A6 278	A7 279	A8 280	B1 281	B2 282	B3 283	B4 284	B5 285	B6 286
P. COELENTERATA	Hydra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA	sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
	Prostoma rubrum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
	Cl. Turbellaria sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
	Cl. Oligochaeta														
	F. Enchytraeidae sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Glossoscolecidae														
	Sparganophilus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Naididae														
	Arcteonais lomondi	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Nais barbata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ophidonais serpentina	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stylaria lacustris	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Uncinais uncinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Tubificidae														
	Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Limnodrilus claparedianus	-	-	-	-	-	-	-	1	-	-	-	-	-	-
	L. hoffmeisteri	-	-	6	-	-	15	3	1	-	-	-	-	45	2
	L. udekemianus	-	1	-	-	-	-	-	-	-	-	-	-	-	-
	Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Potamothenix bedoti	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rhyacodrilus montana	-	-	-	-	-	12	-	-	-	-	-	-	-	-
	Spirosperma ferox	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tubifex ignotus	-	-	-	-	2	-	-	-	-	-	-	-	91	-
	T. kessleri americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T. tubifex	-	-	15	-	3	26	-	-	-	-	-	2	-	1
	Immature with hair	-	-	6	11	35	179	14	1	-	-	85	115	1250	21
	Immature without hair	-	-	1	1	-	83	34	7	-	-	-	2	114	12
	F. Lumbriculidae														
	Stylodrilus heringianus	-	-	-	-	9	15	29	-	-	-	-	-	-	11
Cl. Hirudinea															
	F. Eropobdellidae														
	Dina parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Glossiphoniidae														
	Glossiphonia complanata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Melobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Piscicolidae														
	Piscicola sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
	Cl. Crustacea														
	O. Isopoda														
	F. Asellidae														
	Asellus racovitzai	-	-	-	-	-	-	-	2	-	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	A1 273	A2 274	A3 275	A4 276	A5 277	A6 278	A7 279	A8 280	B1 281	B2 282	B3 283	B4 284	B5 285	B6 286
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoriidae															
Pontoporeia hoyi		1	-	-	-	-	1	-	-	-	-	-	-	-	-
F. Gammaridae															
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	1
S.F. Chironominae															
Chironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	A1 273	A2 274	A3 275	A4 276	A5 277	A6 278	A7 279	A8 280	B1 281	B2 282	B3 283	B4 284	B5 285	B6 286
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	1	3	3	2	10	-	3	-	-	-	-	5	9
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
D. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		1	2	31	15	51	341	80	15	0	0	85	119	1505	56
TOTAL NUMBER OF TAXA ‡		1	2	3	3	4	6	3	5	0	0	1	2	4	4
SHANNON-WEINER DIVERSITY ‡		0	1	1.19	1.05	1.12	1.5	1.49	1.86	0	0	0	0.12	0.84	1.91
EVENNESS ‡		-	1	0.75	0.66	0.56	0.58	0.94	0.8	-	-	-	0.12	0.42	0.96
RICHNESS ‡		-	1.44	0.58	0.74	0.76	0.86	0.46	1.48	-	-	-	0.21	0.41	0.75

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

[illegible]

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

[illegible]

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	B7 287	C1 288	C2 289	C3 290	C4 291	C5 292	C6 293	C7 294	D1 295	D2 296	D3 297	D4 298	D5 299	D6 300	D7 301
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae																
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae																
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		14	-	-	-	-	-	3	2	-	4	14	14	-	-	16
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae																
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA																
D. Gastropoda																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae																
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae																
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae																
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae																
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae																
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia																
F. Sphaeriidae																
Pisidium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		43	0	0	3	38	12	195	53	0	83	63	145	129	27	667
TOTAL NUMBER OF TAXA #		6	0	0	1	1	1	2	4	0	4	4	7	3	5	5
SHANNON-WEINER DIVERSITY #		1.9	0	0	0	0	0	0.11	1.2	0	1.1	1.64	1.18	0.27	1.53	0.8
EVENNESS #		0.74	-	-	-	-	-	0.11	0.6	-	0.55	0.82	0.42	0.17	0.66	0.35
RICHNESS #		1.33	-	-	-	-	-	0.19	0.76	-	0.68	0.72	1.21	0.41	1.21	0.62

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

[illegible]

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	E1 302	E2 303	E3 304	E4 305	E5 306	E6 307	E7 308	F1 309	F2 310	F3 311	F4 312	F5 313	G1 314	G2 315
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoriidae															
Pontoporeia hoyi		-	-	-	1	10	9	4	1	-	-	2	-	-	2
F. Gammaridae															
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	-	-	1
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet		-	-	-	-	-	1	1	-	1	-	-	-	-	-
S.F. Chironominae															
Chironomus sp.		-	-	-	-	-	-	-	-	3	-	1	-	1	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	3	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	2	-	1	3	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	E1 302	E2 303	E3 304	E4 305	E5 306	E6 307	E7 308	F1 309	F2 310	F3 311	F4 312	F5 313	G1 314	G2 315
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	1
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	1	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	1	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	2	1	2	-	-	-	1	-	1	-	2	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	1	-	1	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	-	-	-	3	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		0	27	17	32	36	14	36	29	30	1	6	2	323	40
TOTAL NUMBER OF TAXA ‡		0	1	3	4	6	3	7	4	8	1	5	2	5	7
SHANNON-WEINER DIVERSITY ‡		0	0	0.83	0.73	2.13	1.2	2.43	0.9	2.14	0	2.25	1	0.36	2.01
EVENNESS ‡		-	-	0.53	0.37	0.83	0.76	0.87	0.45	0.71	-	0.97	1	0.16	0.71
RICHNESS ‡		-	-	0.71	0.87	1.4	0.76	1.67	0.89	2.06	-	2.23	1.44	0.69	1.63

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	G3 316	G4 317	G5 318	G6 319	G7 320	G8 321	G9 322	H1 323	H2 324	H3 325	H4 326	H5 327	H6 328	H7 329
P. COELENTERATA	Hydra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA	sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
	Prostoma rubrum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
	Cl. Turbellaria sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
	Cl. Oligochaeta														
	F. Enchytraeidae sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	F. Glossoscolecidae														
	Sparganophilus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Naididae														
	Arcteonais lomondi	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Nais barbata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ophidonais serpentina	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stylaria lacustris	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Uncinais uncinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Tubificidae														
	Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Lienodrilus clapedianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. hoffmeisteri	-	-	-	-	-	-	-	8	-	1	2	-	-	-
	L. udekemianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Potamothenix bedoti	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rhyacodrilus montana	8	-	-	3	3	-	-	-	23	-	1	4	-	-
	Spirosperma ferox	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Tubifex ignotus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T. kessleri americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T. tubifex	-	-	3	1	-	-	-	4	-	-	-	-	1	-
	Immature with hair	4	-	1	1	-	-	-	282	2	-	1	-	-	-
	Immature without hair	-	-	-	-	-	-	-	29	-	2	-	-	-	-
	F. Lumbriculidae														
	Stylodrilus heringianus	-	6	-	-	1	4	-	4	1	5	1	-	2	4
Cl. Hirudinea															
	F. Eropobdellidae														
	Bina parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Glossiphoniidae														
	Glossiphonia complanata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Melobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Piscicolidae														
	Piscicola sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
	Cl. Crustacea														
	O. Isopoda														
	F. Asellidae														
	Asellus racovitzai	1	-	-	-	-	-	-	-	1	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION #	63	64	65	66	67	68	69	H1	H2	H3	H4	H5	H6	H7
	Bio-Coll. #	316	317	318	319	320	321	322	323	324	325	326	327	328	329
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoriidae															
Pontoporeia hoyi		10	5	5	16	16	7	33	2	1	7	-	35	12	6
F. Gammaridae															
Gammarus sp.		1	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	2	-	-	-	3	-	-	-	1	1	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet		1	-	-	-	-	-	1	-	-	-	1	-	-	-
S.F. Chironominae															
Chironomus sp.		-	-	1	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	1	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diansesinae															
Monodiansesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	63	64	65	66	67	68	69	H1	H2	H3	H4	H5	H6	H7
		316	317	318	319	320	321	322	323	324	325	326	327	328	329
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	1	-	1	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	1	1	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		1	1	-	-	-	-	-	3	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	-	1	-	6	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		25	12	12	22	21	12	43	332	30	15	7	40	15	13
TOTAL NUMBER OF TAXA ‡		6	3	4	4	4	3	4	5	7	3	6	3	3	4
SHANNON-WEINER DIVERSITY ‡		2.04	1.33	1.78	1.24	1.12	1.28	1.08	0.72	1.37	1.51	2.52	0.63	0.91	1.74
EVENNESS ‡		0.79	0.84	0.89	0.62	0.56	0.81	0.54	0.31	0.49	0.95	0.98	0.4	0.57	0.87
RICHNESS ‡		1.55	0.8	1.21	0.97	0.99	0.8	0.8	0.69	1.76	0.74	2.57	0.54	0.74	1.17

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

[illegible]

SPECIES	STATION #	H8	H9	I1	I2	I3	I4	I5	I6	I7	I8	I9	J1	J2	J3	J4
	Bio-Coll. #	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda																
F. Haustoriidae																
Pontoporeia hoyi		4	32	3	-	32	12	23	2	1	5	27	-	4	6	15
F. Gammaridae																
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae																
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea																
Mysis relicta		-	-	-	-	-	1	1	-	-	-	-	-	-	-	-
Cl. Arachnida																
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta																
O. Lepidoptera																
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera																
F. Heptageniidae																
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera																
F. Hydropsychidae																
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lianophilidae																
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (iam)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae																
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae																
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera																
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera																
F. Dytisidae																
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera																
F. Chironomidae																
Chironomid pupae sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae																
Chironomus sp.		-	-	4	-	2	-	3	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicrochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
S.F. Diamesinae																
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	H8 330	H9 331	I1 332	I2 333	I3 334	I4 335	I5 336	I6 337	I7 338	I8 339	I9 340	J1 341	J2 342	J3 343	J4 344
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae																
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae																
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	1	-	-	-	-	-	-	-	1	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae																
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA																
D. Gastropoda																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae																
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae																
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae																
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae																
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae																
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia																
F. Sphaeriidae																
Pisidium sp.		3	6	-	1	-	1	2	-	-	3	4	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		10	43	50	35	37	17	32	3	3	8	32	172	30	7	28
TOTAL NUMBER OF TAXA ‡		4	5	6	5	4	5	7	2	2	2	3	4	5	2	3
SHANNON-WEINER DIVERSITY ‡		1.85	1.25	2.11	1.66	0.78	1.44	1.54	0.92	0.92	0.95	0.74	1.05	2.19	0.59	1.36
EVENNESS ‡		0.92	0.54	0.82	0.72	0.39	0.62	0.55	0.92	0.92	0.95	0.47	0.53	0.94	0.59	0.86
RICHNESS ‡		1.3	1.06	1.28	1.13	0.83	1.41	1.73	0.91	0.91	0.48	0.58	0.58	1.18	0.51	0.6

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

[illegible]

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	J5 345	J6 346	J7 347	J8 348	K1 349	K2 350	K3 351	K4 352	K5 353	L1 354	L2 355	L3 356	L4 357	M1 358
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoriidae															
<i>Pontoporeia hoyi</i>		15	13	10	16	4	6	7	30	5	11	14	10	27	11
F. Gammaridae															
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
<i>Mysis relicta</i>		2	-	-	-	-	-	-	2	-	-	-	-	1	-
Cl. Arachnida															
<i>Acarina</i> sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lianeophilidae															
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
<i>Mystacides</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
<i>Chironomus</i> sp.		3	-	-	-	1	-	-	1	-	-	-	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Deacryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	3
<i>Paratanytarsus</i> sp.		-	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	-	-	-	-	7	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-	-	-	1	-	1	2

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	J5 345	J6 346	J7 347	J8 348	K1 349	K2 350	K3 351	K4 352	K5 353	L1 354	L2 355	L3 356	L4 357	M1 358
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	1	-	-	-	-	1	2	-	-	-	2	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	5	-	-	-	-	-
Thienemanniya complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
D. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	1	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		2	-	-	-	1	1	3	6	-	-	3	4	3	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		25	15	10	16	17	11	21	65	189	27	25	16	40	26
TOTAL NUMBER OF TAXA ‡		6	3	1	1	6	5	6	8	8	4	6	3	7	8
SHANNON-WEINER DIVERSITY ‡		1.87	0.7	0	0	1.94	1.87	2.3	2.12	1.81	1.37	1.92	1.3	1.67	2.49
EVENNESS ‡		0.72	0.44	-	-	0.75	0.8	0.89	0.71	0.6	0.69	0.74	0.82	0.6	0.83
RICHNESS ‡		1.55	0.74	-	-	1.76	1.67	1.64	1.68	1.34	0.91	1.55	0.72	1.63	2.15

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	M2 359	M3 360	M4 361	N1 362	N2 363	M3 364	Q1 365	Q2 366	Q3 367	P1 368	P2 369	P3 370	Q1 371	Q2 372
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
Cl. Oligochaeta															
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae															
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae															
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae															
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		1	-	-	-	1	-	-	-	-	-	-	-	-	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus teapletoni		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	2	-	10	7	-	-	13	3	-	-	-	8	-
Spirosperma ferox		-	-	-	-	-	-	-	-	-	-	-	2	-	-
Tubifex ignotus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	-	-	-	-	-	-	2
Immature with hair		-	-	-	-	-	-	-	1	-	-	-	-	5	3
Immature without hair		-	2	-	-	-	-	-	-	-	-	-	-	3	1
F. Lumbriculidae															
Stylodrilus heringianus		-	-	2	-	-	5	-	-	1	-	-	45	4	-
Cl. Hirudinea															
F. Eropobdellidae															
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae															
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
Cl. Crustacea															
O. Isopoda															
F. Asellidae															
Asellus racovitzai		-	-	-	-	-	-	-	-	5	-	-	-	2	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	M2 359	M3 360	M4 361	N1 362	N2 363	N3 364	O1 365	O2 366	O3 367	P1 368	P2 369	P3 370	Q1 371	Q2 372
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	-	-	-	-	5	-	-
O. Amphipoda															
F. Haustoriidae															
<i>Pontoporeia hoyi</i>		18	18	8	26	19	5	33	19	22	38	6	29	15	36
F. Gammaridae															
<i>Gammarus</i> sp.		-	-	-	1	-	-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
<i>Hyalella azteca</i>		-	-	-	-	-	2	-	-	-	-	-	5	-	-
F. Mysidacea															
<i>Mysis relicta</i>		-	-	-	-	1	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
<i>Acarina</i> sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	1	-	-	-	-
F. Lepidostomatidae															
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
<i>Nystacides</i> sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
<i>Chironomus</i> sp.		-	-	-	1	3	-	-	-	-	-	-	-	1	6
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Deinoceratomyia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	5	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-	3	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-
S.F. Diamesinae															
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-	2	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	M2 359	M3 360	M4 361	N1 362	N2 363	N3 364	Q1 365	Q2 366	Q3 367	P1 368	P2 369	P3 370	Q1 371	Q2 372
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	1	-	-	-	-	-	-	-	1	-	-	3	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	7	-	-	-	-	-	1	-	-	-	1	-
Parametriocnemeus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	1	-	-	5	4	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	1	-	-
P. MOLLUSCA															
D. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	1	1	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	7	-	3	1	-	7	2	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		19	23	17	45	31	15	34	33	46	42	6	96	52	48
TOTAL NUMBER OF TAXA ‡		2	4	3	5	5	4	2	3	10	4	1	11	12	4
SHANNON-WEINER DIVERSITY ‡		0.3	1.09	1.4	1.6	1.56	1.91	0.19	1.14	2.46	0.6	0	2.16	3.14	1.14
EVENNESS ‡		0.3	0.54	0.88	0.69	0.67	0.95	0.19	0.72	0.74	0.3	-	0.62	0.87	0.57
RICHNESS ‡		0.34	0.96	0.71	1.05	1.16	1.11	0.28	0.57	2.35	0.8	-	2.19	2.78	0.77

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION #	Q3	Q4	R1	R2	R3	S1	S2	S3
	Bio-Coll. #	373	374	375	376	377	378	379	380
P. COELENTERATA	Hydra sp.	-	-	-	-	-	-	-	-
P. NEMATODA	sp.indet.	-	-	-	-	-	-	-	-
P. NEMERTEA									
	Prostoma rubrum	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES									
	Cl. Turbellaria sp.indet.	-	-	-	-	-	-	-	-
P. ANNELIDA									
	Cl. Oligochaeta								
	F. Enchytraeidae sp.indet.	-	-	-	-	-	-	-	-
	F. Glossoscolecidae								
	Sparganophilus sp.	-	-	-	-	-	-	-	1
	F. Naididae								
	Arcteonais lomondi	-	-	-	-	-	-	-	-
	Nais barbata	-	-	-	-	-	-	-	-
	Ophidonais serpentina	-	-	-	-	-	-	-	-
	Slavina appendiculata	-	-	-	-	-	-	-	-
	Specaria josinae	-	-	-	-	-	-	-	-
	Stylaria lacustris	-	-	-	-	-	-	-	-
	Uncinais uncinata	-	-	-	-	-	-	-	-
	F. Tubificidae								
	Aulodrilus americanus	-	-	-	-	-	-	-	-
	Limonodrilus claparedianus	-	-	-	-	-	-	-	-
	L. hoffmeisteri	-	-	-	-	-	-	-	-
	L. udekemianus	-	-	-	-	-	-	1	-
	Ilyodrilus templetoni	-	-	-	-	-	-	-	-
	Potamothenix bedoti	-	-	-	-	-	-	-	-
	Rhyacodrilus montana	2	7	1	-	-	-	-	-
	Spirosperma ferox	-	-	-	-	-	3	-	3
	Tubifex ignotus	-	-	-	-	-	-	-	-
	T. kessleri americanus	-	-	-	-	-	-	-	-
	T. tubifex	-	-	1	-	-	2	-	-
	Immature with hair	-	-	1	-	2	-	-	-
	Immature without hair	-	-	-	-	-	-	-	-
	F. Lumbriculidae								
	Stylodrilus heringianus	-	-	-	-	1	23	20	11
Cl. Hirudinea									
	F. Eropobdellidae								
	Dina parva	-	-	-	-	-	-	-	-
	F. Glossiphoniidae								
	Glossiphonia complanata	-	-	-	-	-	-	-	-
	Helobdella stagnalis	-	-	-	-	-	-	-	-
	F. Piscicolidae								
	Piscicola sp.	-	-	-	-	-	-	-	1
P. ARTHROPODA									
	Cl. Crustacea								
	O. Isopoda								
	F. Asellidae								
	Asellus racovitzai	-	-	-	-	13	30	1	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	Q3 373	Q4 374	R1 375	R2 376	R3 377	S1 378	S2 379	S3 380
<i>Lirceus lineatus</i>		-	-	-	-	-	5	-	-
O. Amphipoda									
F. Haustoriidae									
<i>Pontoporeia hoyi</i>		42	17	18	10	35	54	46	11
F. Gammaridae									
<i>Gammarus</i> sp.		-	-	-	-	-	8	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-
F. Talitridae									
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-
F. Mysidacea									
<i>Mysis relicta</i>		4	4	-	-	-	-	-	-
Cl. Arachnida									
Acarina sp.indet		-	-	-	-	-	-	-	-
Cl. Insecta									
O. Lepidoptera									
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-
O. Ephemeroptera									
F. Heptageniidae									
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-
O. Trichoptera									
F. Hydropsychidae									
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-
F. Limnephilidae									
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-
F. Lepidostomatidae									
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-
F. Leptoceridae									
<i>Mystacides</i> sp.		-	-	-	-	-	-	-	-
O. Hemiptera									
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-
O. Coleoptera									
F. Dytisidae									
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-
O. Diptera									
F. Chironomidae									
Chironomid pupae sp.indet		-	-	-	-	-	-	-	-
S.F. Chironominae									
<i>Chironomus</i> sp.		-	1	2	-	2	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-
<i>Demicryptochironomus</i> sp.		-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	1
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	2	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	1	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	17
S.F. Diamesinae									
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-

Table A1-1: Jackfish Bay Benthic Data for 1969 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	Q3 373	Q4 374	R1 375	R2 376	R3 377	S1 378	S2 379	S3 380
Potthastia sp.		-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	3
S.F. Orthocladinae									
Cricotopus sp.		-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	1	-	2	-	3
Parametriocheilus sp.		-	-	-	-	-	-	-	-
S.F. Tanytoidinae									
Ablabesomyia sp.		-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	1	2
Thienemannimyia complex		-	-	-	-	-	-	-	-
F. Ceratopogonidae									
Bezzia complex		-	-	-	-	-	-	-	-
P. MOLLUSCA									
D. Gastropoda									
sp.indet.		-	-	-	-	-	-	-	-
F. Hydrobiidae									
Amnicola limosa		-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-
F. Lymnaeidae									
Lymnaea sp.		-	-	-	-	-	-	-	-
F. Physidae									
Physa gyrina		-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-
F. Planorbidae									
Gyraulus parvus		-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-
F. Valvatidae									
Valvata sincera		-	-	-	-	-	-	1	-
V. tricarinata		-	-	-	-	-	-	-	-
Cl. Bivalvia									
F. Sphaeriidae									
Pisidium sp.		-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		48	29	23	11	54	127	72	53
TOTAL NUMBER OF TAXA #		3	4	4	2	6	8	7	10
SHANNON-WEINER DIVERSITY #		0.66	1.51	1.09	0.44	1.47	2.21	1.41	2.67
EVENNESS #		0.42	0.75	0.54	0.44	0.57	0.74	0.5	0.8
RICHNESS #		0.52	0.89	0.96	0.42	1.25	1.45	1.4	2.27

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Bio-Coll. #	76	77	78	79	80	81	82	83	84	85	86	87	88	89
P. COELENTERATA	Hydra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA	sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
	Prostoma rubrum	-	-	-	-	-	-	-	-	-	-	-	-	-	1
P. PLATYHELMINTHES															
	Cl. Turbellaria sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
	Cl. Oligochaeta														
	F. Enchytraeidae sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Glossoscolecidae														
	Sparganophilus sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Naididae														
	Arcteonais lomondi	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Nais barbata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ophidonais serpentina	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stylaria lacustris	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Uncinais uncinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Tubificidae														
	Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Liamodrilus clapedianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. hoffmeisteri	-	-	-	-	4	32	3	13	-	2	-	-	-	-
	L. udekenianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Potamotheix bedoti	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rhyacodrilus montana	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Spirosperma ferox	-	-	-	-	-	3	-	-	-	-	-	-	-	-
	Tubifex ignotus	-	-	-	-	-	-	6	-	15	-	47	-	-	-
	T. kessleri americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T. tubifex	-	-	-	1	-	6	-	5	45	5	-	-	-	-
	Immature with hair	-	-	15	-	384	32	6	110	47	32	960	2	-	-
	Immature without hair	-	-	-	-	17	10	4	-	5	1	47	-	-	-
	F. Lumbriculidae														
	Stylodrilus heringianus	-	-	-	-	-	105	10	-	45	1	-	1	2	19
Cl. Hirudinea															
	F. Eropobdellidae														
	Dina parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Glossiphoniidae														
	Glossiphonia complanata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Melobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Piscicolidae														
	Piscicola sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
	Cl. Crustacea														
	O. Isopoda														
	F. Asellidae														
	Asellus racovitzai	-	-	-	-	-	13	-	-	-	-	-	1	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	1 76	2 77	3 78	4 79	5 80	6 81	7 82	8 83	9 84	10 85	11 86	12 87	13 88	14 89
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	2	1
Parametrioctenus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		1	-	-	-	13	3	-	-	-	-	1	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melisona trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		1	0	15	1	418	205	29	128	158	41	1055	12	7	23
TOTAL NUMBER OF TAXA #		1	0	1	1	3	7	4	2	5	3	4	5	3	5
SHANNON-WEINER DIVERSITY #		0	0	0	0	0.48	1.88	1.97	0.47	1.5	0.54	0.53	1.78	1.56	1.01
EVENNESS #		-	-	-	-	0.31	0.67	0.98	0.47	0.64	0.34	0.27	0.77	0.98	0.44
RICHNESS #		-	-	-	-	0.33	1.13	0.89	0.21	0.79	0.54	0.43	1.61	1.03	1.28

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Lianodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	15 90	16 91	17~ 92~	18 93	19 94	20 95	21 96	22 97	23 98	24 99	25 100	26 101	27 102	28 103	29 104
P. COELENTERATA																
Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	1	1	-
P. NEMERTEA																
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES																
Cl. Turbellaria																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA																
Cl. Oligochaeta																
F. Enchytraeidae																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae																
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae																
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lionodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	-	-	-	-	-	-	-	-	1	-	2	-	1	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	29	-	1	-	-	1	3	7	-	-	12	13	1	-
Spirosperma ferox		-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
Tubifex ignotus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Immature with hair		-	3	-	-	-	-	-	1	-	-	-	-	-	-	-
Immature without hair		-	-	-	-	-	-	-	-	-	1	-	-	1	-	-
F. Lumbriculidae																
Stylodrilus heringianus		-	4	1	3	4	10	7	36	-	3	17	-	2	48	24
Cl. Hirudinea																
F. Eropobdellidae																
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae																
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae																
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA																
Cl. Crustacea																
O. Isopoda																
F. Asellidae																
Asellus racovitzai		-	-	2	-	-	-	-	7	-	-	1	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	15 90	16 91	17~ 92~	18 93	19 94	20 95	21 96	22 97	23 98	24 99	25 100	26 101	27 102	28 103	29 104
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda																
F. Haustoridae																
<i>Pontoporeia hoyi</i>		1	14	-	1	15	5	9	7	7	5	32	5	3	6	2
F. Gammaridae																
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae																
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea																
<i>Mysis relicta</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida																
Acarina sp.indet		-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
Cl. Insecta																
O. Lepidoptera																
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera																
F. Heptageniidae																
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera																
F. Hydropsychidae																
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae																
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae																
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae																
<i>Nystacides</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera																
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera																
F. Dytisidae																
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera																
F. Chironomidae																
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
S.F. Chironominae																
<i>Chironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
<i>Demicrochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	12	-	1	1	-	-	1	-	7
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae																
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	2	-	-	1	-	-	8	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	15 90	16 91	17* 92*	18 93	19 94	20 95	21 96	22 97	23 98	24 99	25 100	26 101	27 102	28 103	29 104
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
S.F. Orthocladinae																
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	10	-	-	-	-	-	-	6	2
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae																
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae																
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA																
O. Gastropoda																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae																
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae																
Lymnaea sp.		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
F. Physidae																
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae																
Gyraulus parvus		-	-	1	-	-	-	2	-	-	-	-	-	1	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuous		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae																
Valvata sincera		1	-	-	1	6	1	-	2	-	2	-	-	3	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia																
F. Sphaeriidae																
Pisidium sp.		-	-	-	1	1	3	-	3	-	2	-	1	5	6	3
Sphaerium sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		2	50	5	7	26	19	43	63	17	15	56	20	35	78	39
TOTAL NUMBER OF TAXA §		2	4	4	5	4	4	8	10	5	6	7	4	11	9	6
SHANNON-WEINER DIVERSITY §		1	1.51	-	2.13	1.54	1.64	2.49	2.18	1.78	2.42	1.62	1.49	2.87	1.94	1.74
EVENNESS §		1	0.75	-	0.92	0.77	0.82	0.83	0.66	0.76	0.93	0.58	0.75	0.83	0.61	0.67
RICHNESS §		1.44	0.77	-	2.06	0.92	1.02	1.86	2.17	1.41	1.85	1.49	1	2.81	1.84	1.36

§ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	30	31	32	33	34	35	36	37	38	39~	40	41	42	43
	Bio-Coll. #	105	106	107	108	109	110	111	112	113	114~	115	116	117	118
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
Cl. Turbellaria sp.indet.		-	1	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
Cl. Oligochaeta															
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae															
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae															
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae															
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	-	3	-	-	-	1	-	-	-	8	7	27	1
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	3	-	5	-
Potamotheix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		16	11	-	4	-	-	11	-	-	-	7	-	-	-
Spirosperma ferox		-	-	-	2	-	-	-	-	1	-	-	-	-	-
Tubifex ignotus		-	-	-	-	-	-	-	-	-	-	-	-	82	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	-	-	-	60	24	11	-
Immature with hair		-	-	-	-	-	-	-	-	-	-	22	162	93	-
Immature without hair		-	-	-	-	-	-	1	-	-	-	8	4	109	-
F. Lumbriculidae															
Stylodrilus heringianus		3	2	72	107	13	1	-	29	25	3	1	-	16	98
Cl. Hirudinea															
F. Eropobdellidae															
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Glossiphonia complanata		-	-	1	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae															
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
Cl. Crustacea															
O. Isopoda															
F. Asellidae															
Asellus racovitzai		-	-	-	1	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	30	31	32	33	34	35	36	37	38	39*	40	41	42	43
	Bio-Coll. #	105	106	107	108	109	110	111	112	113	114*	115	116	117	118
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoridae															
Pontoporeia hoyi		2	2	-	2	1	-	3	2	-	-	-	-	-	-
F. Gammaridae															
Gammarus sp.		-	-	-	-	-	-	-	-	-	3	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet.		-	-	2	-	-	-	-	1	1	-	-	-	-	-
S.F. Chironominae															
Chironomus sp.		-	-	-	-	-	-	-	-	-	-	1	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	1	-	-	-	-	-	-	1	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	1	-	2	-	-	-	-	1	-	1	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Damesinae															
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	1	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

	STATION #	30	31	32	33	34	35	36	37	38	39*	40	41	42	43
SPECIES	Bio-Coll. #	105	106	107	108	109	110	111	112	113	114*	115	116	117	118
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	1	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	1	-	-	1	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	4	-	-	-	-	-	6
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	1	1	3	-	-	2	-	-	-	6	1	-	3
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Aenicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prometis exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		1	1	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		4	5	-	-	-	1	1	-	-	-	3	-	-	1
Sphaerium sp.		-	-	-	1	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		26	24	79	123	14	3	19	35	27	6	121	198	344	109
TOTAL NUMBER OF TAXA #		5	8	6	9	2	3	5	3	3	2	10	3	6	5
SHANNON-WEINER DIVERSITY #		1.67	2.35	0.62	0.93	0.37	1.58	1.78	0.82	0.46	-	1.71	0.35	1.86	0.64
EVENNESS #		0.72	0.78	0.24	0.29	0.37	1	0.77	0.52	0.29	-	0.52	0.22	0.72	0.27
RICHNESS #		1.23	2.2	1.14	1.66	0.38	1.82	1.36	0.56	0.61	-	1.88	0.38	0.86	0.85

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Lianodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	44	45	46	47	48	49	50	51~	52	53	55	56	57	58
	Bio-Coll. #	119	120	121	122	123	124	125	126~	127	128	130	131	132	133
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
Prostoma rubrum		-	-	-	-	-	-	1	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
Cl. Oligochaeta															
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae															
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae															
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae															
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		1	-	17	1	-	57	2	-	-	-	-	37	-	-
L. udekeianus		-	-	-	-	-	-	-	-	-	-	3	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	3	-	1	-	-	-	-	-	-	-	-	-	-
Spirosperma ferox		-	1	-	-	-	-	-	-	-	-	-	-	-	-
Tubifex ignotus		-	-	-	-	-	52	-	-	-	-	15	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	3	34	3	-	14	1	-	-	-	3	23	-	-
Immature with hair		1	15	247	6	-	66	37	-	4	-	13	114	11	1
Immature without hair		-	4	59	4	-	47	3	-	-	-	5	14	-	-
F. Lumbriculidae															
Stylodrilus heringianus		10	14	-	13	-	71	-	-	-	113	1	-	-	-
Cl. Hirudinea															
F. Eropobdellidae															
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae															
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
Cl. Crustacea															
O. Isopoda															
F. Asellidae															
Asellus racovitzai		-	1	-	1	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	44 119	45 120	46 121	47 122	48 123	49 124	50 125	51~ 126~	52 127	53 128	55 130	56 131	57 132	58 133
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoridae															
Pontoporeia hoyi		-	-	-	1	-	-	-	-	-	-	-	-	-	-
F. Gammaridae															
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Nystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
Chironomus sp.		-	-	-	3	-	-	-	-	-	-	-	3	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	1	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	44 119	45 120	46 121	47 122	48 123	49 124	50 125	51~ 126~	52 127	53 128	55 130	56 131	57 132	58 133
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		1	1	-	19	-	1	7	1	-	-	1	13	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	1	2	-	-	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		13	42	358	54	0	309	51	1	4	114	41	204	11	1
TOTAL NUMBER OF TAXA #		4	7	3	9	0	6	4	1	1	2	6	4	1	1
SHANNON-WEINER DIVERSITY #		1.15	2.03	0.77	2.5	0	2.01	1.15	-	0	0.07	1.97	1.23	0	0
EVENNESS #		0.57	0.72	0.49	0.79	-	0.78	0.57	-	-	0.07	0.76	0.61	-	-
RICHNESS #		1.17	1.61	0.34	2.01	-	0.87	0.76	-	-	0.21	1.35	0.56	-	-

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	59 134	61 136	62 137	63 138	64 139	65 140	66 141	69 144	70 145	71 146	72 147	73 148	74 149	75 150	76 151
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
P. NEMERTEA																
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES																
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA																
Cl. Oligochaeta																
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae																
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae																
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinaiis uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lionodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	14	2	1	-	-	-	-	-	-	-	-	-	1	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	-	-	2	2	-	-	3	1	15	4	5	11	20	-
Spirosperma ferox		-	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubifex ignotus		-	32	-	-	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		5	5	-	-	-	-	-	-	-	3	2	4	9	1	-
Immature with hair		209	9	2	1	1	-	-	-	-	2	-	-	-	-	-
Immature without hair		10	-	-	-	-	1	-	-	-	3	-	-	-	-	-
F. Lumbriculidae																
Stylodrilus heringianus		-	333	188	42	86	-	4	11	2	-	-	-	-	-	-
Cl. Hirudinea																
F. Eropobdellidae																
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae																
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae																
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA																
Cl. Crustacea																
O. Isopoda																
F. Asellidae																
Asellus racovitzai		-	8	4	-	1	-	1	1	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	59 134	61 136	62 137	63 138	64 139	65 140	66 141	69 144	70 145	71 146	72 147	73 148	74 149	75 150	76 151
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	1	1	3	1	-
S.F. Orthocladinae																
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametricnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae																
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		5	3	-	1	1	-	1	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae																
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA																
D. Gastropoda																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae																
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae																
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae																
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae																
Gyraulus parvus		-	-	-	-	-	-	-	2	-	-	-	-	-	-	1
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae																
Valvata sincera		-	-	-	-	-	-	2	1	-	-	-	-	-	-	2
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia																
F. Sphaeriidae																
Pisidium sp.		-	-	-	-	-	-	-	2	2	-	2	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		229	414	197	47	95	1	8	24	5	30	11	11	23	25	3
TOTAL NUMBER OF TAXA *		3	8	5	5	7	1	4	8	3	5	6	4	3	6	2
SHANNON-WEINER DIVERSITY *		0.41	1.17	0.35	0.69	0.68	0	1.75	2.44	1.52	1.89	2.37	1.68	1.42	1.19	0.92
EVENNESS *		0.26	0.39	0.15	0.3	0.24	-	0.88	0.81	0.96	0.81	0.92	0.84	0.9	0.46	0.92
RICHNESS *		0.37	1.16	0.76	1.04	1.32	-	1.44	2.2	1.24	1.18	2.09	1.25	0.64	1.55	0.91

* - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	77 152	78 153	80 155	81 156	82 157	83 158	84 159	85 160	86 161	87 162	88 163	89~ 164~	90 165	91 166
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	2	1	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-
Thienemanniomyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	1	-	-	-	-	-	-	-	-	-	1	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	4	8	-	-	-	-	2	2	5	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	1	-	-	-
TOTAL NUMBER OF ORGANISMS		1	0	34	30	19	21	91	6	9	11	19	17	148	80
TOTAL NUMBER OF TAXA #		1	0	7	4	5	5	3	1	2	3	6	7	4	4
SHANNON-WEINER DIVERSITY #		0	0	2	1.7	1.78	1.67	1.07	0	0.76	1.31	2.21	-	1.02	0.95
EVENNESS #		-	-	0.71	0.85	0.77	0.72	0.68	-	0.76	0.83	0.85	-	0.51	0.47
RICHNESS #		-	-	1.7	0.88	1.36	1.31	0.44	-	0.46	0.83	1.7	-	0.6	0.68

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	92 167	93 168	94 169	95 170	96 171	97 172	98 173	99 174	100 175	101 176	102 177	103 178	104 179	105 180
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA															
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA															
Cl. Oligochaeta															
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae															
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae															
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae															
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		1	2	3	-	2	-	-	10	2	7	7	-	2	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		1	8	17	1	1	-	-	-	12	-	23	35	-	-
Spirosperma ferox		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubifex ignotus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	24	6	20	1	-	-	19	6	13	8	-	4	-
Immature with hair		-	6	-	28	1	-	-	124	87	143	9	-	4	-
Immature without hair		-	-	2	-	-	-	-	3	13	11	4	-	-	-
F. Lumbriculidae															
Stylodrilus heringianus		4	1	2	-	-	1	-	-	3	20	5	8	30	21
Cl. Hirudinea															
F. Eropobdellidae															
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae															
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae															
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
Cl. Crustacea															
O. Isopoda															
F. Asellidae															
Asellus racovitzai		-	-	-	-	-	-	-	-	-	1	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	92 167	93 168	94 169	95 170	96 171	97 172	98 173	99 174	100 175	101 176	102 177	103 178	104 179	105 180
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	2	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	3	-	2	2	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemeus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	1	-	-	-	-	-	-	2	-	3	1	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		1	-	2	-	-	1	-	1	5	-	-	-	2	-
Sphaerium sp.		-	1	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		10	50	33	51	8	2	2	157	131	197	59	51	45	21
TOTAL NUMBER OF TAXA ‡		5	9	6	3	5	2	2	3	7	5	5	7	6	1
SHANNON-WEINER DIVERSITY ‡		2.05	1.99	2	0.38	2.25	1	1	0.47	1.48	1.02	2.02	1.56	1.55	0
EVENNESS ‡		0.88	0.63	0.77	0.24	0.97	1	1	0.29	0.53	0.44	0.87	0.56	0.6	-
RICHNESS ‡		1.74	2.04	1.43	0.51	1.92	1.44	1.44	0.4	1.23	0.76	0.98	1.53	1.31	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Lianodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	106 181	107 182	108 183	109~ 184~	110~ 185~	111 186	112 187	113 188	114 189	115 190	116 191	117 192	118 193
P. COELENTERATA														
Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA														
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES														
Cl. Turbellaria														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA														
Cl. Oligochaeta														
F. Enchytraeidae														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae														
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae														
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae														
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		2	-	-	-	-	-	-	1	2	-	2	-	3
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		6	-	1	-	1	-	33	6	2	-	13	-	10
Spirosperma ferox		-	-	-	-	-	-	-	-	-	-	-	1	-
Tubifex ignotus		-	-	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		3	-	-	-	-	-	4	-	1	-	5	-	-
Immature with hair		3	-	-	-	1	1	1	1	3	-	1	-	-
Immature without hair		3	-	-	-	-	-	-	-	1	-	-	-	-
F. Lumbriculidae														
Stylodrilus heringianus		-	2	-	-	-	3	4	32	18	40	-	97	2
Cl. Hirudinea														
F. Eropobdellidae														
Dina parva		-	-	-	-	1	-	-	-	-	-	-	-	-
F. Glossiphoniidae														
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae														
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA														
Cl. Crustacea														
O. Isopoda														
F. Asellidae														
Asellus racovitzai		1	-	-	-	2	-	-	-	1	17	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

	STATION #	106	107	108	109~	110~	111	112	113	114	115	116	117	118
SPECIES	Bio-Coll. #	181	182	183	184~	185~	186	187	188	189	190	191	192	193
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
Pontoporeia hoyi		3	2	19	-	-	2	-	2	6	3	3	9	20
F. Gammaridae														
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
Mysis relicta		1	1	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		1	1	-	-	1	-	-	-	-	-	-	-	-
S.F. Chironominae														
Chironomus sp.		-	-	-	-	-	-	4	-	3	-	1	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae														
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	106 181	107 182	108 183	109~ 184~	110~ 185~	111 186	112 187	113 188	114 189	115 190	116 191	117 192	118 193
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	1	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		2	-	-	-	-	-	2	-	-	-	-	-	-
Meterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		1	-	-	1	-	1	-	2	1	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
O. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	1	-	-	-	-	1	3	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		4	-	6	-	-	-	-	-	1	1	-	3	4
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL NUMBER OF ORGANISMS		29	5	27	2	6	7	48	44	40	64	25	110	40
TOTAL NUMBER OF TAXA ‡		9	3	4	2	5	4	5	6	10	5	5	4	6
SHANNON-WEINER DIVERSITY ‡		2.88	1.52	1.19	-	-	1.84	1.5	1.38	2.57	1.44	1.83	0.66	1.96
EVENNESS ‡		0.91	0.96	0.6	-	-	0.92	0.65	0.53	0.77	0.62	0.79	0.33	0.76
RICHNESS ‡		2.38	1.24	0.91	-	-	1.54	1.03	1.32	2.44	0.96	1.24	0.64	1.36

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Lianodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	119	120	121	122	123	124	125	126	127	128	129	130	131
	Bio-Coll. #	194	195	196	197	198	199	200	201	202	203	204	205	206
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA														
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES														
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA														
Cl. Oligochaeta														
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae														
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae														
Arctonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	1	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae														
Aulodrilus americanus		-	-	1	-	-	-	-	1	-	-	-	-	-
Limnodrilus clapedianus		-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	-	2	-	-	-	2	-	1	1	-	-	1
L. udekenianus		-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		16	12	12	-	-	11	20	3	1	6	7	11	16
Spirosperma ferox		-	-	7	1	-	-	-	134	1	-	-	-	-
Tubifex ignotus		-	-	2	-	-	-	-	-	1	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		2	-	1	-	-	3	2	-	-	-	-	-	-
Immature with hair		2	1	-	-	-	2	4	1	-	1	-	-	-
Immature without hair		-	1	1	-	-	1	1	-	-	-	-	1	3
F. Lumbriculidae														
Stylodrilus heringianus		1	-	6	21	-	-	-	21	15	-	1	-	3
Cl. Hirudinea														
F. Eropobdellidae														
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae														
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-
Melobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae														
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA														
Cl. Crustacea														
O. Isopoda														
F. Asellidae														
Asellus racovitzai		-	-	48	1	-	-	-	1	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	119 194	120 195	121 196	122 197	123 198	124 199	125 200	126 201	127 202	128 203	129 204	130 205	131 206
<i>Lirceus lineatus</i>		-	-	4	1	-	-	-	1	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
<i>Pontoporeia hoyi</i>		22	16	23	56	11	1	29	10	3	2	7	18	49
F. Gammaridae														
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
<i>Hyalella azteca</i>		-	-	2	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
<i>Mysis relicta</i>		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	1	1	1	-	-	4	-	-	-	-	1
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	1	-	-	-	-
F. Limnephilidae														
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
<i>Mystacides</i> sp.		-	-	-	-	-	-	-	-	-	1	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	1	-	-	-	-
S.F. Chironominae														
<i>Chironomus</i> sp.		1	-	-	-	-	1	-	-	-	-	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Demicrochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	2	-	-	-	1	-	-	-	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	1	-	-	-	-	-	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	5	-	-	-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae														
<i>Monodiamesa</i> sp.		-	-	-	6	-	-	-	1	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	119 194	120 195	121 196	122 197	123 198	124 199	125 200	126 201	127 202	128 203	129 204	130 205	131 206
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	1	-	-	-	-	-
Protanypus sp.		-	-	1	-	1	-	-	1	-	-	1	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	1	1	-	-	-	10	1	-	-	-	2
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	3	-	-	-	-	1	-	-	-	-	1
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
O. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	3	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacudus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	-	-	-	-	2	-	-	-	-	2
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		2	4	8	-	-	10	10	7	-	-	1	2	3
Sphaerium sp.		1	-	-	-	-	-	-	2	-	-	-	1	-
TOTAL NUMBER OF ORGANISMS		47	34	132	91	13	29	68	202	24	11	17	33	81
TOTAL NUMBER OF TAXA #		7	5	19	10	3	6	5	18	8	5	5	5	9
SHANNON-WEINER DIVERSITY #		1.89	1.7	3.16	1.73	0.77	2	1.96	2.01	1.95	1.87	1.78	1.56	1.89
EVENNESS #		0.67	0.73	0.74	0.52	0.49	0.77	0.84	0.48	0.65	0.8	0.76	0.67	0.6
RICHNESS #		1.56	1.13	3.69	2	0.78	1.48	0.95	3.2	2.2	1.67	1.41	1.14	1.82

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	132 207	133 208	134 209	135 210	136 211	137 212	138 213	139 214	140 215	141 216	142 217	143 218	144 219
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
<i>Pontoporeia hoyi</i>		13	11	5	5	15	8	11	-	-	2	-	-	4
F. Gammaridae														
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
<i>Mysis relicta</i>		2	-	-	-	-	-	1	-	-	-	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
<i>Mystacides</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	2
S.F. Chironominae														
<i>Chironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Demicrochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	2	-	-	-	1
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae														
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-	1	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	132 207	133 208	134 209	135 210	136 211	137 212	138 213	139 214	140 215	141 216	142 217	143 218	144 219
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	1	-	1	1	-	-	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladus sp.		-	-	-	-	-	-	-	1	-	-	-	-	-
Parametrioconus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	1	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
O. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	-	1	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		4	3	5	6	10	13	4	-	-	-	-	-	-
Sphaerium sp.		-	1	-	1	1	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		51	35	43	40	44	64	51	4	4	2	0	2	10
TOTAL NUMBER OF TAXA ‡		5	6	7	10	6	6	7	2	3	1	0	1	4
SHANNON-WEINER DIVERSITY ‡		1.87	1.86	1.79	2.59	2	1.93	2	0.81	1.5	0	0	0	1.72
EVENNESS ‡		0.81	0.72	0.64	0.78	0.77	0.75	0.71	0.81	0.95	-	-	-	0.86
RICHNESS ‡		1.02	1.41	1.6	2.44	1.32	1.2	1.53	0.72	1.44	-	-	-	1.3

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	145 220	146 221	147 222	148 223	149 224	150 225	151 226	152 227	153 228	154 229	155 230	156 231	157 232
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA														
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES														
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA														
Cl. Oligochaeta														
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae														
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae														
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		1	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae														
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	-	-	-	-	-	-	-	-	1	-	-	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	-	-	-	-	-	1	-	-	2	3	-	-
Spirosperma ferox		-	-	-	-	-	-	-	-	-	9	-	-	-
Tubifex ignotus		-	-	-	-	-	-	-	1	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	1	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	-	-	-	-	-	-
Immature with hair		-	-	-	-	-	-	-	-	-	-	-	-	-
Immature without hair		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lumbriculidae														
Stylodrilus heringianus		1	-	-	-	-	-	3	17	1	38	44	-	-
Cl. Hirudinea														
F. Eropobdellidae														
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae														
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-
Melobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae														
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA														
Cl. Crustacea														
O. Isopoda														
F. Asellidae														
Asellus racovitzai		-	-	-	-	-	-	-	1	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	145 220	146 221	147 222	148 223	149 224	150 225	151 226	152 227	153 228	154 229	155 230	156 231	157 232
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	6	-	2	5	-	-
O. Amphipoda														
F. Haustoridae														
<i>Pontoporeia hoyi</i>		-	-	7	3	24	-	10	14	1	9	7	2	2
F. Gammaridae														
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
<i>Mysis relicta</i>		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	1	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
<i>Nystacides</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		1	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae														
<i>Chironomus</i> sp.		1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Demicyptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	3	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae														
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-	-	2	3	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	145 220	146 221	147 222	148 223	149 224	150 225	151 226	152 227	153 228	154 229	155 230	156 231	157 232
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		24	1	2	3	-	-	-	1	1	1	-	1	2
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-	-	1	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	1	-	-	1	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
O. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		1	-	-	-	-	-	-	-	-	20	11	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	1	-	-	-
TOTAL NUMBER OF ORGANISMS		28	1	9	6	24	0	14	42	3	85	80	3	4
TOTAL NUMBER OF TAXA #		5	1	2	2	1	0	3	8	3	10	11	2	2
SHANNON-WEINER DIVERSITY #		0.88	0	0.76	1	0	0	1.09	2.1	1.58	2.3	2.27	0.92	1
EVENNESS #		0.38	-	0.76	1	-	-	0.69	0.7	1	0.69	0.66	0.92	1
RICHNESS #		1.2	-	0.46	0.56	-	-	0.76	1.87	1.82	2.03	2.28	0.91	0.72

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	158 233	159 234	160 235	161 236	162 237	163 238	164 239	165 240	166 241	167 242	169 244	170 245	171 246
P. COELENTERATA														
Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA														
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES														
Cl. Turbellaria														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA														
Cl. Oligochaeta														
F. Enchytraeidae														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae														
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae														
Arctonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae														
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
Lionodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	-	-	-	-	1	-	-	-	-	-	-	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-
Potamotheix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	-	-	-	-	17	22	8	5	16	-	-	-
Spirosperma ferox		-	-	-	-	-	-	-	-	-	1	-	-	-
Tubifex ignotus		-	-	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	2	3	-	-	-	-
Immature with hair		-	-	-	-	-	-	-	-	-	2	-	-	-
Immature without hair		-	-	-	-	-	1	1	-	-	-	-	-	-
F. Lumbriculidae														
Stylodrilus heringianus		-	-	-	-	-	26	1	-	-	9	16	-	-
Cl. Hirudinea														
F. Eropobdellidae														
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae														
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-
Melobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae														
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA														
Cl. Crustacea														
O. Isopoda														
F. Asellidae														
Asellus racovitzai		-	-	-	-	-	-	1	2	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	158 233	159 234	160 235	161 236	162 237	163 238	164 239	165 240	166 241	167 242	169 244	170 245	171 246
Lirceus lineatus		-	-	-	-	-	-	3	-	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
Pontoporeia hoyi		1	1	2	1	-	4	-	1	-	8	-	-	-
F. Gammaridae														
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
Mysis relicta		-	-	-	-	-	-	1	3	3	1	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	1	-	-	-	-
S.F. Chironominae														
Chironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	2	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	1	-	-	-	-	-	-	2	1	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae														
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	158 233	159 234	160 235	161 236	162 237	163 238	164 239	165 240	166 241	167 242	169 244	170 245	171 246
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	1	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-	1	-	-	-
Thienemanniayia complex		-	-	-	-	-	1	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
O. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	-	-	-	-	-	-	1	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		-	-	-	-	-	3	-	1	-	1	-	-	-
Sphaerium sp.		-	-	-	2	-	-	1	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		1	1	3	3	0	53	32	17	12	42	17	0	0
TOTAL NUMBER OF TAXA ‡		1	1	2	2	0	6	8	6	4	10	2	0	0
SHANNON-WEINER DIVERSITY ‡		0	0	0.92	0.92	0	1.83	1.72	2.16	1.82	2.52	0.32	0	0
EVENNESS ‡		-	-	0.92	0.92	-	0.71	0.57	0.84	0.91	0.76	0.32	-	-
RICHNESS ‡		-	-	0.91	0.91	-	1.26	2.02	1.76	1.21	2.41	0.35	-	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

	STATION #	172	173	174	175	176	177	178	180*	182	183	184	185	186
SPECIES	Bio-Coll. #	247	248	249	250	251	252	253	255*	257	258	259	260	261
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
Pontoporeia hoyi		10	9	2	-	-	6	-	3	-	-	-	-	16
F. Gammaridae														
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
Mysis relicta		-	1	-	5	2	-	-	1	-	-	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		-	-	-	-	-	-	1	-	-	-	-	-	-
S.F. Chironominae														
Chironomus sp.		-	1	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	1	-	-	-
S.F. Diamesinae														
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	172 247	173 248	174 249	175 250	176 251	177 252	178 253	180* 255*	182 257	183 258	184 259	185 260	186 261
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		2	-	2	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	1	-	9	-	-	-	-
Parametriocnemeus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	2	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	1	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
D. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Prometis exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	-	1	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		5	5	1	-	2	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		64	42	14	16	14	8	5	4	9	1	2	2	17
TOTAL NUMBER OF TAXA ‡		7	7	6	5	6	2	2	2	1	1	1	1	2
SHANNON-WEINER DIVERSITY ‡		2.4	2.19	2.35	1.77	2.47	0.81	0.72	-	0	0	0	0	0.32
EVENNESS ‡		0.86	0.78	0.91	0.76	0.95	0.81	0.72	-	-	-	-	-	0.32
RICHNESS ‡		1.44	1.61	1.89	1.44	1.89	0.48	0.62	-	-	-	-	-	0.35

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	187A 262	187 263	188 264	189 265	190 266	191 267	192 268	193 269	194 270	195 271	196 272	197 273	198 274
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
Pontoporeia hoyi		-	16	10	25	11	8	17	16	5	5	20	42	11
F. Gammaridae														
Gammarus sp.		-	-	-	1	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	1	-	-	-	-	-	-	-	-	-
F. Talitridae														
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea														
Mysis relicta		-	-	-	-	-	-	-	-	1	-	-	-	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	1	-	-	-	-
S.F. Chironominae														
Chironomus sp.		-	-	1	-	1	-	2	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Damesinae														
Monodanessa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	187A 262	187 263	188 264	189 265	190 266	191 267	192 268	193 269	194 270	195 271	196 272	197 273	198 274
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	1	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA														
O. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		-	1	-	-	1	-	3	-	1	1	1	3	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	1	-
TOTAL NUMBER OF ORGANISMS		0	19	13	51	14	14	25	24	20	9	33	54	11
TOTAL NUMBER OF TAXA ‡		0	4	4	7	4	3	5	3	5	3	4	4	1
SHANNON-WEINER DIVERSITY ‡		0	0.88	1.15	1.74	1.09	1.38	1.51	1.1	1.59	1.35	1.27	1.03	0
EVENNESS ‡		-	0.44	0.57	0.62	0.54	0.87	0.65	0.69	0.68	0.85	0.64	0.51	-
RICHNESS ‡		-	1.02	1.17	1.53	1.14	0.76	1.24	0.63	1.34	0.91	0.86	0.75	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	199 275	200 276	201 277	202 278	203 279	204 280	205 281	207 283	208 284	209 285	210 286	211 287	212 288
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMERTEA														
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES														
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA														
Cl. Oligochaeta														
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae														
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae														
Arcteonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae														
Aulodrilus americanus		-	-	-	-	2	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		-	-	-	-	-	-	-	-	-	-	-	-	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	1	3	4	-	-	5	3	-	-	-	-	-
Spirosperma ferox		-	-	-	-	13	10	-	-	-	-	-	-	-
Tubifex ignotus		-	-	-	-	1	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	-	-	-	-	-	-
Immature with hair		-	-	-	-	-	-	1	1	-	-	-	-	-
Immature without hair		-	-	-	-	1	-	-	-	-	-	-	-	-
F. Lumbriculidae														
Stylodrilus heringianus		-	12	-	-	1	10	-	-	-	-	-	-	-
Cl. Hirudinea														
F. Eropobdellidae														
Dina parva		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae														
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	2	-	-	-	-	-	-	-	-
F. Piscicolidae														
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA														
Cl. Crustacea														
O. Isopoda														
F. Asellidae														
Asellus racovitzai		-	2	-	-	-	4	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	199	200	201	202	203	204	205	207	208	209	210	211	212
	Bio-Coll. #	275	276	277	278	279	280	281	283	284	285	286	287	288
Lirceus lineatus		-	-	-	-	4	13	-	-	-	-	-	-	-
O. Amphipoda														
F. Haustoridae														
Pontoporeia hoyi		19	5	12	4	4	134	13	8	-	5	-	1	15
F. Gammaridae														
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae														
Hyalella azteca		-	-	-	-	2	1	-	-	-	-	-	-	-
F. Mysidacea														
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	1	-
Cl. Arachnida														
Acarina sp.indet		-	-	-	-	-	2	-	-	-	-	-	-	-
Cl. Insecta														
O. Lepidoptera														
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera														
F. Heptageniidae														
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera														
F. Hydropsychidae														
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae														
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae														
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae														
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera														
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera														
F. Dytisidae														
Oreodytes sp.		-	-	-	-	1	-	-	-	-	-	-	-	-
O. Diptera														
F. Chironomidae														
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	1
S.F. Chironominae														
Chironomus sp.		-	-	5	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	20	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	1	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	7	-	-	-	-	-	-	-	-
S.F. Diamesinae														
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION #	199	200	201	202	203	204	205	207	208	209	210	211	212
	Bio-Coll. #	275	276	277	278	279	280	281	283	284	285	286	287	288
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	2	1	-	-	1	-	-	-	-	-	-
S.F. Orthocladinae														
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	1	1	-	-	-	-	-	-	-
Parametriocnemeus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae														
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	5	2	1	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae														
Bezzia complex		-	-	-	-	-	2	-	-	-	-	-	-	-
P. MOLLUSCA														
D. Gastropoda														
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae														
Amnicola limosa		-	-	-	-	11	1	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	2	1	-	-	-	-	-	-	-
F. Lymnaeidae														
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae														
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae														
Gyraulus parvus		-	-	-	-	-	2	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae														
Valvata sincera		-	-	-	1	1	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	1	-	-	-	-	-	-	-	-
Cl. Bivalvia														
F. Sphaeriidae														
Pisidium sp.		3	-	1	-	11	-	1	-	-	13	-	1	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		22	20	23	10	70	203	23	12	0	18	0	3	15
TOTAL NUMBER OF TAXA #		2	4	5	4	18	14	7	3	0	2	0	3	1
SHANNON-WEINER DIVERSITY #		0.57	1.49	1.85	1.72	3.57	1.93	1.93	1.19	0	0.85	0	1.58	0
EVENNESS #		0.57	0.75	0.8	0.86	0.86	0.51	0.69	0.75	-	0.85	-	1	-
RICHNESS #		0.32	1	1.28	1.3	4	2.45	1.91	0.8	-	0.35	-	1.82	-

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

[illegible]

Table A1-2: Jackfish Bay Benthic Data For 1975 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	213 289	214 290	215 291	216 292	217 293	219 295	220 296	221 297	222 298
Potthastia sp.		-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-
S.F. Orthocladinae										
Cricotopus sp.		-	-	-	-	1	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-
S.F. Tanypodinae										
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-
F. Ceratopogonidae										
Bezzia complex		-	-	-	-	-	-	-	-	-
P. MOLLUSCA										
O. Gastropoda										
sp.indet.		-	-	-	-	-	-	-	-	-
F. Hydrobiidae										
Amnicola limosa		-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-
F. Lymnaeidae										
Lymnaea sp.		-	-	-	-	-	-	-	-	-
F. Physidae										
Physa gyrina		-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-
F. Planorbidae										
Gyraulus parvus		-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-
F. Valvatidae										
Valvata sincera		-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium sp.		-	2	-	-	-	-	-	3	-
Sphaerium sp.		-	1	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		0	6	3	6	3	2	1	4	0
TOTAL NUMBER OF TAXA ‡		0	5	3	3	2	1	1	2	0
SHANNON-WEINER DIVERSITY ‡		0	2.25	1.58	1.25	0.92	0	0	0.81	0
EVENNESS ‡		-	0.97	1	0.79	0.92	-	-	0.81	-
RICHNESS ‡		-	2.23	1.82	1.12	0.91	-	-	0.72	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	0 1	1 2	2 3	3~ 4~	3 5	4~ 6~	4 7	5 8	7 10	8~ 11~	9 12	10 14	11 15	12~ 16~
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parameuriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	12	-	-	-	1	2
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	-	-	-	-	-	1	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		0	0	1056	56	21	422	9808	41	68	122	103	4724	3489	69
TOTAL NUMBER OF TAXA ‡		0	0	1	1	1	1	1	2	6	3	4	3	5	8
SHANNON-WEINER DIVERSITY ‡		0	0	0	-	0	-	0	0.38	1.61	-	0.24	0.22	1.45	-
EVENNESS ‡		-	-	-	-	-	-	-	0.38	0.62	-	0.12	0.14	0.62	-
RICHNESS ‡		-	-	-	-	-	-	-	0.27	1.18	-	0.65	0.24	0.49	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION #	13	14	15	16	18	19	20	22	23	24	26	27	28*	29*	30	27	28*	29*
	Bio-Coll. #	17	18	19	20	22	23	24	26	27	28*	29*	30	31	32*	33*			
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda																			
F. Haustoridae																			
Pontoporeia hoyi		1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
F. Gammaridae																			
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae																			
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea																			
Mysis relicta		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida																			
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta																			
O. Lepidoptera																			
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera																			
F. Heptageniidae																			
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera																			
F. Hydropsychidae																			
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae																			
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae																			
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae																			
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera																			
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera																			
F. Dytisidae																			
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera																			
F. Chironomidae																			
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae																			
Chironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae																			
Monodiamesa sp.		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	13 17	14 18	15 19	16 20	18 22	19 23	20 24	22 26	23 27	24* 28*	25* 29*	26 30	27 31	28* 32*	29* 33*
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	2	1	2	-	-	-	1	-	-	3	1	-	-
S.F. Orthocladinae																
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	2	-	-	-	-	-	2	2
Parametrioctonus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae																
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Thienemanniayia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
F. Ceratopogonidae																
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA																
O. Gastropoda																
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae																
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae																
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae																
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae																
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae																
Valvata sincera		-	-	1	-	1	3	1	-	-	1	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia																
F. Sphaeriidae																
Pisidium sp.		-	-	-	1	-	6	1	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		4	27	32	16	29	37	5	14	5	2	1	20	24	25	43
TOTAL NUMBER OF TAXA ‡		2	1	4	6	4	6	5	3	4	2	1	5	5	4	3
SHANNON-WEINER DIVERSITY ‡		0.81	0	1.42	2	1.47	2.14	2.32	0.95	1.92	-	-	2.25	1.82	-	-
EVENNESS ‡		0.81	-	0.71	0.77	0.73	0.83	1	0.6	0.96	-	-	0.97	0.79	-	-
RICHNESS ‡		0.72	-	0.87	1.8	0.89	1.38	2.49	0.76	1.86	-	-	1.34	1.26	-	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	30 34	31 35	32 36	33 37	34 38	35 39	36 40	37 41	38 42	39~ 42~	40 44	41 45	42 46	43 47
Lirceus lineatus		-	-	-	-	1	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoridae															
Pontoporeia hoyi		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Gammaridae															
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyalella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	1	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	1	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet.		-	-	1	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
Chironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	30 34	31 35	32 36	33 37	34 38	35 39	36 40	37 41	38 42	39* 42*	40 44	41 45	42 46	43 47
Potthastia sp.		-	-	-	2	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		1	-	9	-	-	-	-	4	-	-	-	-	2	1
Protanypus sp.		3	1	-	-	-	1	4	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	1	-	2	-	-	1	-	-	-	-	-	-
Parametrioctenus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	1	-	-	-
Procladius sp.		1	-	3	-	-	-	2	2	3	-	1	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	1	-	-	2	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		41	54	251	30	20	13	45	223	113	1	797	1492	59	14
TOTAL NUMBER OF TAXA ‡		9	7	9	5	4	3	7	13	8	1	6	2	6	5
SHANNON-WEINER DIVERSITY ‡		2.25	2	2.33	1.6	1.58	0.77	2.51	2.25	2.15	-	1.41	0.74	1.66	2.16
EVENNESS ‡		0.71	0.71	0.74	0.69	0.79	0.49	0.9	0.61	0.72	-	0.55	0.74	0.64	0.93
RICHNESS ‡		2.15	1.5	1.45	1.18	1	0.78	1.58	2.22	1.48	-	0.75	0.14	1.23	1.52

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	44 48	45 49	46 50	47~ 51~	48~ 52~	49~ 53~	50 54	51 55	52 56	53~ 57~	55 59	56 60	57 61	58 62
Lirceus lineatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoridae															
Pontoporeia hoyi		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Gammaridae															
Gammarus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crangonyx sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
Hyaella azteca		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
Mysis relicta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
Stenonema sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
Hydropsyche sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Limnephilidae															
Psychoglypha sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
Lepidostoma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
Mystacides sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
Oreodytes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
Chironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Demicryptochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dicrotendipes sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Endochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harnischia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parachironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paracladopelma sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paratanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phaenopsectra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polypedilum sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stictochironomus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
Monodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION #	44	45	46	47*	48*	49*	50	51	52	53*	55	56	57	58
	Bio-Coll. #	48	49	50	51*	52*	53*	54	55	56	57*	59	60	61	62
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		1	-	-	-	-	1	-	-	1	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametricnemeus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		1	-	-	1	-	3	7	1	-	-	-	4	-	-
Thienemanniomyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	2	-	-	-	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		50	129	411	78	5	43	38	421	6	2	1	15	24	49
TOTAL NUMBER OF TAXA ‡		6	1	7	6	2	5	6	3	2	2	1	3	1	1
SHANNON-WEINER DIVERSITY ‡		1.52	0	2.4	-	-	-	2.05	0.13	0.65	-	0	1.16	0	0
EVENNESS ‡		0.59	-	0.86	-	-	-	0.79	0.08	0.65	-	-	0.73	-	-
RICHNESS ‡		1.28	-	1	-	-	-	1.37	0.33	0.56	-	-	0.74	-	-

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	59	60~	61~	63	66~	69	70~	73	76~	79~	80	83	86	89	90
		63	64~	65~	67	67~	69	70~	71	72~	73~	74	75	76	77	78
P. COELENTERATA Hydra sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA sp.indet.		-	-	1	-	-	-	-	-	-	-	-	-	2	-	-
P. NEMERTEA																
Prostoma rubrum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES																
Cl. Turbellaria sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ANNELIDA																
Cl. Oligochaeta																
F. Enchytraeidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossoscolecidae																
Sparganophilus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Naididae																
Arctonais lomondi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nais barbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophidonais serpentina		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Slavina appendiculata		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Specaria josinae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stylaria lacustris		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uncinais uncinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Tubificidae																
Aulodrilus americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limnodrilus claparedianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L. hoffmeisteri		1	-	-	-	-	-	-	3	-	-	-	3	-	1	-
L. udekemianus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ilyodrilus templetoni		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potamothrix bedoti		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhyacodrilus montana		-	-	-	-	-	9	-	-	-	-	-	-	-	15	-
Spirosperma ferox		-	-	-	191	-	-	-	-	-	-	-	3	-	3	-
Tubifex ignotus		4	-	-	403	-	-	-	-	-	-	-	-	-	-	-
T. kessleri americanus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T. tubifex		-	-	-	-	-	-	-	9	-	-	-	55	-	1	10
Immature with hair		1	-	5	446	-	1	1	52	2	-	-	81	-	-	278
Immature without hair		21	-	-	64	-	1	-	9	-	-	-	16	-	-	-
F. Lumbriculidae																
Stylodrilus heringianus		9	-	5	64	-	21	2	-	-	-	2	-	33	-	-
Cl. Hirudinea																
F. Eropobdellidae																
Dina parva		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
F. Glossiphoniidae																
Glossiphonia complanata		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Helobdella stagnalis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Piscicolidae																
Piscicola sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA																
Cl. Crustacea																
O. Isopoda																
F. Asellidae																
Asellus racovitzai		-	-	4	-	2	-	-	-	-	1	-	-	-	-	-

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	207 124	208 125	209 126	210 127	211 128	212 129	213 130	214 131	215 132
Potthastia sp.		-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-
Protanypus sp.		-	-	-	-	-	-	-	-	-
S.F. Orthocladinae										
Cricotopus sp.		-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-
S.F. Tanypodinae										
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	-
F. Ceratopogonidae										
Bezzia complex		-	-	-	-	-	-	-	-	-
P. MOLLUSCA										
D. Gastropoda										
sp.indet.		-	-	-	-	-	-	-	-	-
F. Hydrobiidae										
Amnicola limosa		-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-
F. Lymnaeidae										
Lymnaea sp.		-	-	-	-	-	-	-	-	-
F. Physidae										
Physa gyrina		-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	1	-	-	-
F. Planorbidae										
Gyraulus parvus		-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-
F. Valvatidae										
Valvata sincera		-	-	1	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium sp.		-	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		40	1	3	3	0	6	19	1	27
TOTAL NUMBER OF TAXA #		2	1	3	1	0	2	2	1	5
SHANNON-WEINER DIVERSITY #		0.54	0	1.58	0	0	0.65	0.83	0	1.9
EVENNESS #		0.54	-	1	-	-	0.65	0.83	-	0.82
RICHNESS #		0.27	-	1.82	-	-	0.56	0.34	-	1.21

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	59	60~	61~	63	66~	69	70~	73	76~	79~	80	83	86	89	90
		63	64~	65~	67	67~	69	70~	71	72~	73~	74	75	76	77	78
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
S.F. Orthocladinae																
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanyptodinae																
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	1	-	1	-	-	-	-	-	-	-	-	-	-	1
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Ceratopogonidae																
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA																
O. Gastropoda																
sp.indet.		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
F. Hydrobiidae																
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae																
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae																
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae																
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prometis exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae																
Valvata sincera		-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia																
F. Sphaeriidae																
Pisidium sp.		-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		37	1	23	1169	2	36	4	73	10	6	2	158	35	20	291
TOTAL NUMBER OF TAXA #		5	1	8	6	1	6	3	2	4	4	1	3	2	4	4
SHANNON-WEINER DIVERSITY #		1.57	-	-	1.95	-	1.68	-	0.64	-	-	0	0.66	0.32	1.15	0.1
EVENNESS #		0.68	-	-	0.76	-	0.65	-	0.64	-	-	-	0.42	0.32	0.58	0.05
RICHNESS #		1.11	-	-	0.71	-	1.4	-	0.23	-	-	-	0.4	0.28	1	0.53

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

~ - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	93 79	96 80	99 81	100 82	103 83	106 84	113 87	116~ 88~	116 89	119 90	123 91	126 92	127 93	130 94
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	35	1	1
Protanypus sp.		-	-	-	-	-	1	1	-	1	-	-	3	-	-
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	3	3
Parametrioctenus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	1	1	-	-	-	-	1	-	-	27	-	3
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	3	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	1	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	1	-	-
Physa sp.		-	-	-	-	-	-	-	1	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		1	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	2	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	-	-	1	-	2	-	-	-	-	6	-	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		116	6	187	29	25	37	26	11	158	20	1	236	149	25
TOTAL NUMBER OF TAXA #		5	2	4	3	6	2	6	6	6	2	1	20	12	6
SHANNON-WEINER DIVERSITY #		1.19	0.92	0.75	0.87	1.89	0.18	1.58	-	0.45	0.47	0	2.96	2.02	1.84
EVENNESS #		0.51	0.92	0.37	0.55	0.73	0.18	0.61	-	0.18	0.47	-	0.69	0.56	0.71
RICHNESS #		0.84	0.56	0.57	0.59	1.55	0.28	1.53	-	0.99	0.33	-	3.48	2.2	1.55

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	133 95	135 96	136 97	137 98	138 99	141 100	146~ 101~	149 102	152 103	153 104	156 105	159 106	163 107	164 108
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Amphipoda															
F. Haustoridae															
<i>Pontoporeia hoyi</i>		-	-	-	-	1	-	4	-	-	3	-	6	-	2
F. Gammaridae															
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Talitridae															
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Mysidacea															
<i>Mysis relicta</i>		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Arachnida															
Acarina sp.indet		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Insecta															
O. Lepidoptera															
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Ephemeroptera															
F. Heptageniidae															
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Trichoptera															
F. Hydropsychidae															
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lianephilidae															
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lepidostomatidae															
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Leptoceridae															
<i>Mystacides</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Hemiptera															
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Coleoptera															
F. Dytisidae															
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
O. Diptera															
F. Chironomidae															
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Chironominae															
<i>Chironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	4	1	1
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Demicrochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	1	-	-	1	1	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Diamesinae															
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-	4	2	-	-	-	-

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	133 95	135 96	136 97	137 98	138 99	141 100	146* 101*	149 102	152 103	153 104	156 105	159 106	163 107	164 108
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	1	-	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protanypus sp.		1	3	1	-	2	-	-	-	-	-	-	-	1	1
S.F. Orthocladinae															
Cricotopus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	1	9	-	-	-	1
Parametrioctenus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesomyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	1	-	-	-	-	-	-	-	-	-	-	-
Thienemannimyia complex		-	-	-	-	-	-	-	-	1	1	-	-	-	-
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Amnicola limosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Melissoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	-
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		1	1	5	-	1	-	-	-	-	2	-	-	5	-
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		19	14	19	10	18	0	5	0	12	91	4	13	79	42
TOTAL NUMBER OF TAXA ‡		5	5	6	2	6	0	2	0	6	10	3	5	7	9
SHANNON-WEINER DIVERSITY ‡		1.56	1.92	2.32	0.47	1.95	0	-	0	2.36	1.38	1.5	1.89	1.58	2.7
EVENNESS ‡		0.67	0.83	0.9	0.47	0.75	-	-	-	0.91	0.42	0.95	0.81	0.56	0.85
RICHNESS ‡		1.36	1.52	1.7	0.43	1.73	-	-	-	2.01	2	1.44	1.56	1.37	2.14

‡ - immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

STATION #		167	169~	172	173	176	185	188	192	195	197	200	203	204	205
SPECIES	Bio-Coll. #	109	110~	111	112	113	114	116	117	118	119	120	121	122	123
<hr/>															
P. COELENTERATA	Hydra sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. NEMATODA	sp.indet.	-	-	-	-	-	-	-	-	-	-	-	1	-	1
P. NEMERTEA															
	Prostoma rubrum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. PLATYHELMINTHES															
Cl. Turbellaria	sp.indet.	-	-	-	-	-	-	-	-	-	-	-	1	-	-
P. ANNELIDA															
Cl. Oligochaeta															
	F. Enchytraeidae sp.indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Glossoscolecidae														
	Sparganophilus sp.	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	F. Naididae														
	Arcteonais lomondi	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Nais barbata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ophidonais serpentina	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Slavina appendiculata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Specaria josinae	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stylaria lacustris	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Uncinais uncinata	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F. Tubificidae														
	Aulodrilus americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Limnodrilus clapedianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	L. hoffmeisteri	-	-	1	1	-	-	-	-	-	-	-	-	-	-
	L. udekemianus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ilyodrilus templetoni	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Potamothrix bedoti	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Rhyacodrilus montana	9	-	10	19	5	-	1	2	3	7	-	-	-	5
	Spirosperma ferox	-	-	-	1	-	-	-	-	-	-	-	12	7	60
	Tubifex ignotus	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	T. kessleri americanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	T. tubifex	-	-	-	4	1	-	-	-	-	-	-	-	-	-
	Immature with hair	-	-	-	2	-	-	-	-	-	-	-	-	-	-
	Immature without hair	-	-	1	2	-	-	-	-	2	1	-	1	-	6
	F. Lumbriculidae														
	Stylodrilus heringianus	-	-	-	-	-	-	-	-	-	-	-	16	17	12
Cl. Hirudinea															
	F. Eropobdellidae														
	Dina parva	-	-	-	-	-	-	-	-	-	-	-	1	2	-
	F. Glossiphoniidae														
	Glossiphonia complanata	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	Helobdella stagnalis	-	-	-	-	-	-	-	-	-	-	-	2	-	5
	F. Piscicolidae														
	Piscicola sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P. ARTHROPODA															
Cl. Crustacea															
O. Isopoda															
	F. Asellidae														
	Asellus racovitzai	-	1	-	-	-	-	-	-	-	-	-	9	26	24

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

SPECIES	STATION # Bio-Coll. #	167 109	169* 110*	172 111	173 112	176 113	185 114	188 116	192 117	195 118	197 119	200 120	203 121	204 122	205 123
Potthastia sp.		-	-	-	-	-	-	-	-	-	-	-	1	-	-
Prodiamesa sp.		-	-	-	-	-	-	-	-	1	1	-	1	-	5
Protanypus sp.		-	-	1	1	-	-	-	-	3	-	-	-	-	1
S.F. Orthocladinae															
Cricotopus sp.		-	1	-	-	-	-	-	-	-	-	-	-	-	-
Eukiefferiella sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterotrissocladius sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parametriocnemus sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
S.F. Tanypodinae															
Ablabesmyia sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Procladius sp.		-	-	-	2	-	-	-	-	2	-	-	5	1	11
Thienemannimyia complex		-	-	-	-	-	-	-	-	-	-	-	-	-	1
F. Ceratopogonidae															
Bezzia complex		-	-	-	-	-	-	-	-	-	-	-	1	-	3
R. MOLLUSCA															
O. Gastropoda															
sp.indet.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Hydrobiidae															
Annicola limosa		-	-	-	-	-	-	-	-	-	-	-	27	1	8
Marstonia decepta		-	-	-	-	-	-	-	-	-	-	-	2	-	-
F. Lymnaeidae															
Lymnaea sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Physidae															
Physa gyrina		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physa sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Planorbidae															
Gyraulus parvus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Helisoma trivolvis		-	-	-	-	-	-	-	-	-	-	-	1	-	1
Promenetus exacuus		-	-	-	-	-	-	-	-	-	-	-	-	-	-
F. Valvatidae															
Valvata sincera		-	-	-	-	-	-	-	-	-	-	-	-	-	1
V. tricarinata		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cl. Bivalvia															
F. Sphaeriidae															
Pisidium sp.		-	-	2	6	1	-	-	-	-	-	-	2	-	1
Sphaerium sp.		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS		9	4	15	38	7	0	1	6	25	13	0	211	132	287
TOTAL NUMBER OF TAXA #		1	4	4	7	3	0	1	2	8	5	0	28	16	31
SHANNON-WEINER DIVERSITY #		0	-	1.43	2.13	1.15	0	0	0.92	2.38	1.82	0	3.82	2.96	3.8
EVENNESS #		-	-	0.71	0.76	0.72	-	-	0.92	0.79	0.79	-	0.79	0.74	0.77
RICHNESS #		-	-	1.11	1.65	1.03	-	-	0.56	2.17	1.56	-	5.04	3.07	5.3

- immature tubificidae with or without hair setae were added to Tubifex tubifex and Limnodrilus hoffmeisteri respectively.

* - qualitative sample

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

[illegible]

Table A1-3: Jackfish Bay Benthic Data for 1987 (density per 0.05 meter sq.)

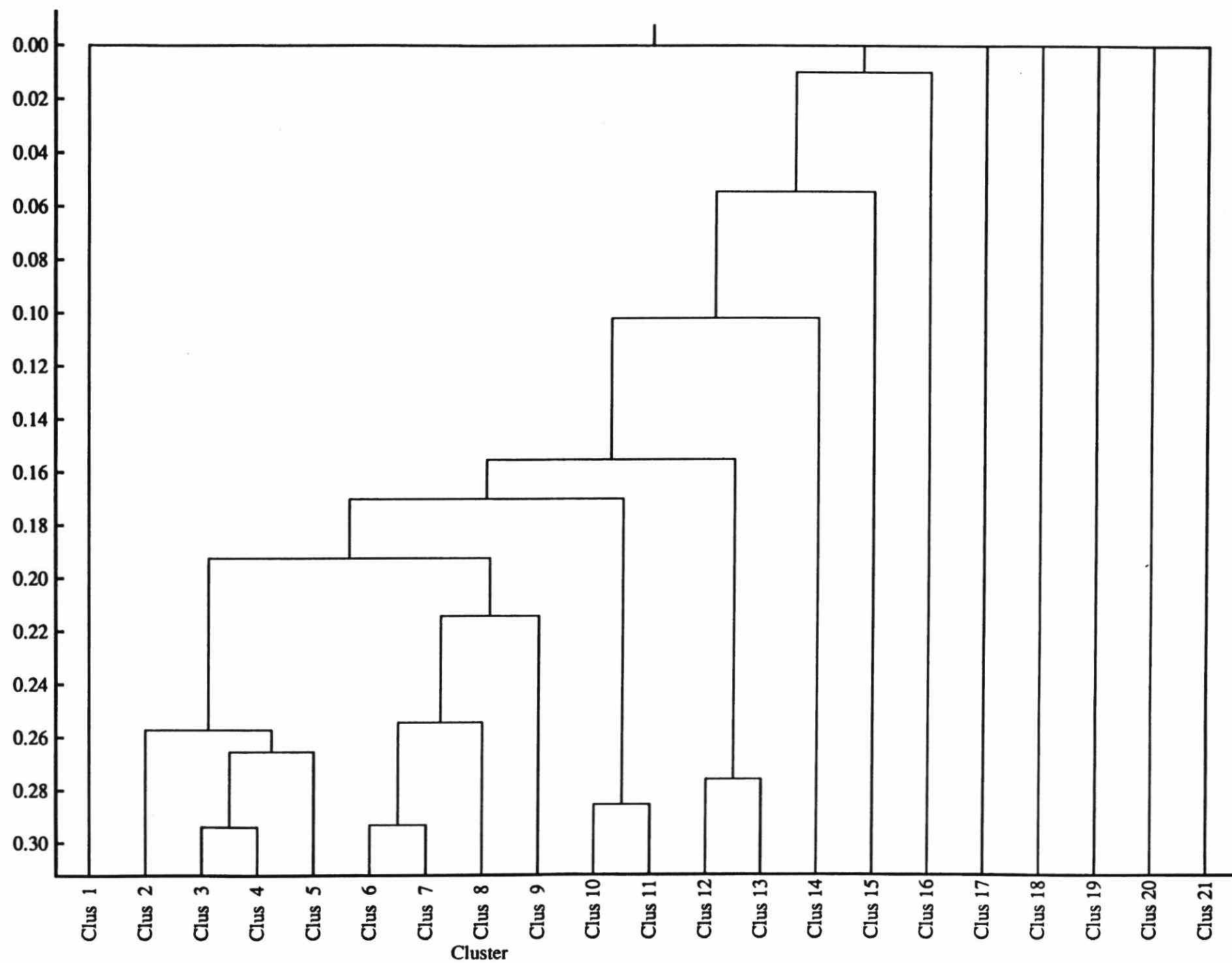
	STATION #	207	208	209	210	211	212	213	214	215
SPECIES	Bio-Coll. #	124	125	126	127	128	129	130	131	132
<i>Lirceus lineatus</i>		-	-	-	-	-	-	-	-	-
O. Amphipoda										
F. Haustoridae										
<i>Pontoporeia hoyi</i>		-	-	1	-	-	-	14	-	2
F. Gammaridae										
<i>Gammarus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Crangonyx</i> sp.		-	-	-	-	-	-	-	-	-
F. Talitridae										
<i>Hyalella azteca</i>		-	-	-	-	-	-	-	-	-
F. Mysidacea										
<i>Mysis relicta</i>		-	-	-	-	-	-	-	-	-
Cl. Arachnida										
Acarina sp.indet		-	-	-	-	-	-	-	-	-
Cl. Insecta										
O. Lepidoptera										
F. Pyralidae sp.indet.		-	-	-	-	-	-	-	-	-
O. Ephemeroptera										
F. Heptageniidae										
<i>Stenonema</i> sp.		-	-	-	-	-	-	-	-	-
O. Trichoptera										
F. Hydropsychidae										
<i>Hydropsyche</i> sp.		-	-	-	-	-	-	-	-	-
F. Limnephilidae										
<i>Psychoglypha</i> sp.		-	-	-	-	-	-	-	-	-
sp.indet. (imm)		-	-	-	-	-	-	-	-	-
F. Lepidostomatidae										
<i>Lepidostoma</i> sp.		-	-	-	-	-	-	-	-	-
F. Leptoceridae										
<i>Mystacides</i> sp.		-	-	-	-	-	-	-	-	-
O. Hemiptera										
F. Corixidae sp.indet.		-	-	-	-	-	-	-	-	-
O. Coleoptera										
F. Dytisidae										
<i>Oreodytes</i> sp.		-	-	-	-	-	-	-	-	-
O. Diptera										
F. Chironomidae										
Chironomid pupae sp.indet.		-	-	-	-	-	-	-	-	-
S.F. Chironominae										
<i>Chironomus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Cryptochironomus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Demicyptochironomus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Dicrotendipes</i> sp.		-	-	-	-	-	-	-	-	-
<i>Endochironomus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Harnischia</i> sp.		-	-	-	-	-	-	-	-	-
<i>Parachironomus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Paracladopelma</i> sp.		-	-	-	-	-	-	-	-	-
<i>Paratanytarsus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Phaenopsectra</i> sp.		-	-	-	-	-	-	-	-	-
<i>Polypedilum</i> sp.		-	-	-	-	-	-	-	-	-
<i>Stictochironomus</i> sp.		-	-	-	-	-	-	-	-	-
<i>Tanytarsus</i> sp.		-	-	-	-	-	-	-	-	-
S.F. Diamesinae										
<i>Monodiamesa</i> sp.		-	-	-	-	-	-	-	-	-



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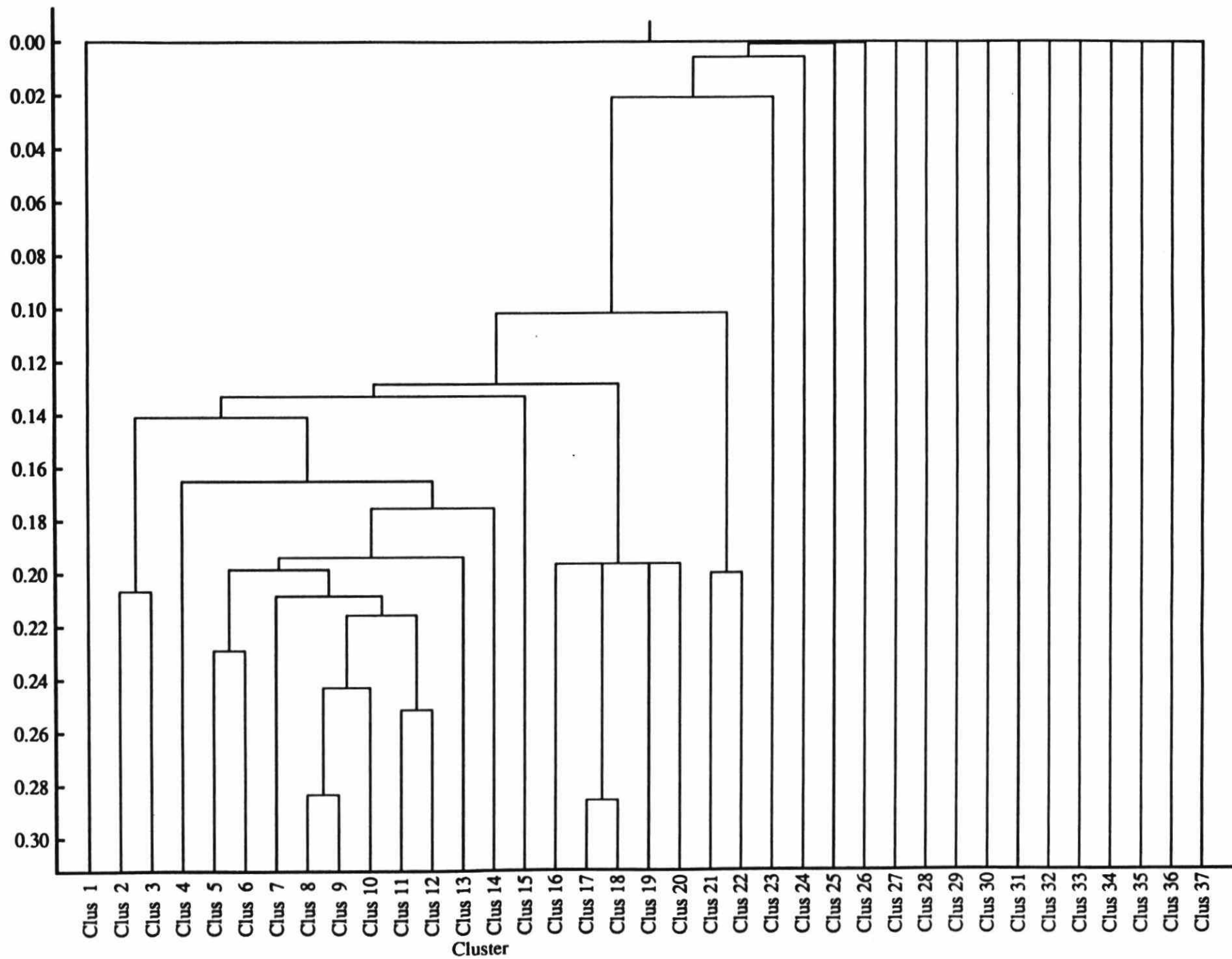
FIGURE A1.1 Dendrogram Using Average Linkage - Jackfish Bay 1969



DENDOGRAM CLUSTER BREAKDOWN - JACKFISH BAY, 1969

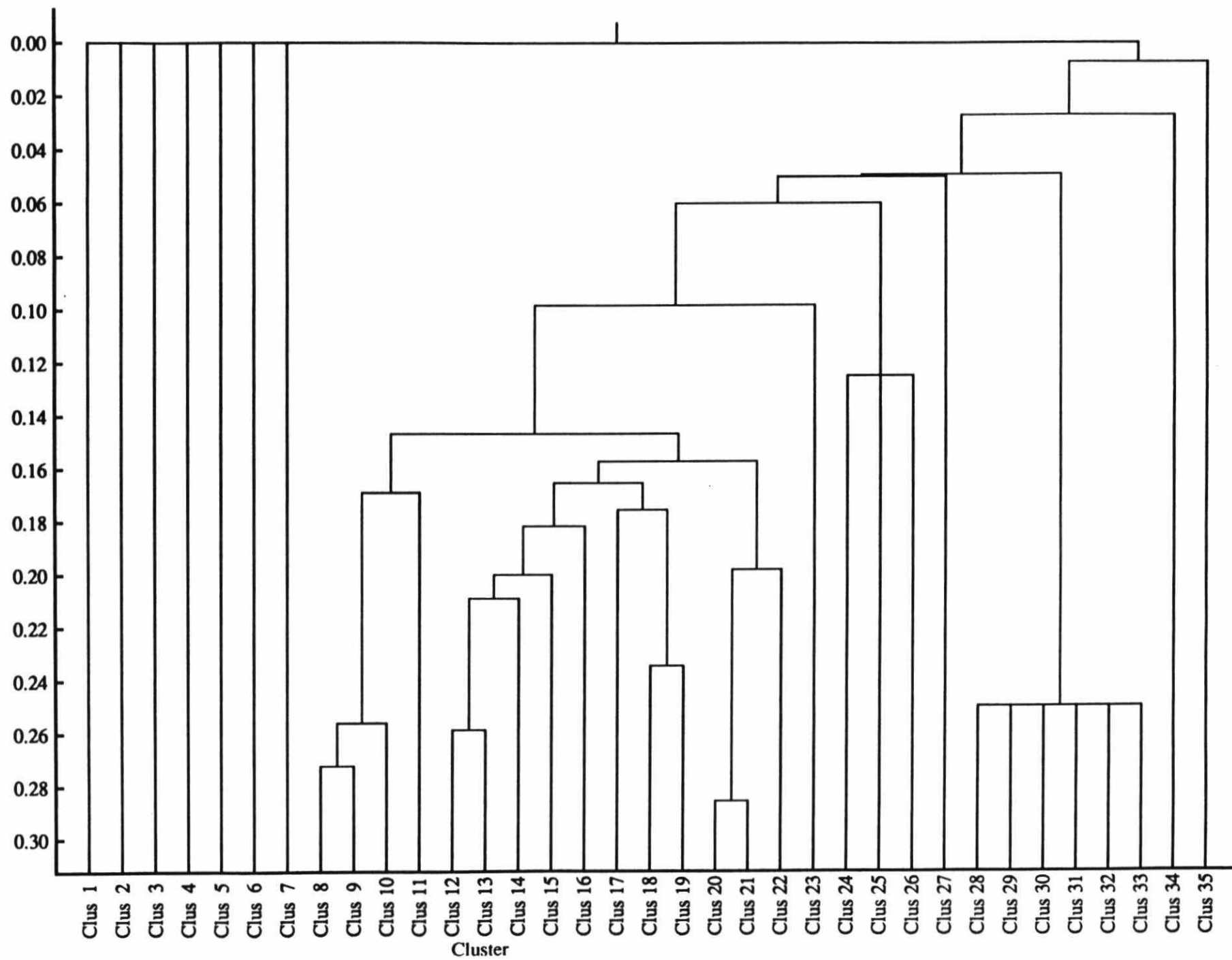
	Stations
Cluster 1	E1
Cluster 2	A1, A3, A4, B3, B5, B6, C3, C4, C5, C7, D2, D7, F1, F3, H1, H5, I6, I7, I8, J1, J3, J4, J7, J8, L1, M2, O1, O2, P2
Cluster 3	A5, C6, G8, H3, H6, R3
Cluster 4	E3, G1, H7, H8, K5, M1, N3
Cluster 5	A6, D4, G2, H4, J2, E5, H2, M3, A7, B4, B7, D3, D6, F2, G7, I1, K1, I2, K2, K3, L2, M4, Q1, Q2, R1, R2, G5, I5, I4, J5, K4, L4, I3, N2, Q4, N1, F4, G3, G6
Cluster 6	E4, E6, G4, L3, P1
Cluster 7	J6
Cluster 8	E7, O3, S2
Cluster 9	G9, I9, H9
Cluster 10	A8
Cluster 11	D5
Cluster 12	P3, S3
Cluster 13	S1
Cluster 14	F5
Cluster 15	A2
Cluster 16	E2
Cluster 17	D1
Cluster 18	C2
Cluster 19	C1
Cluster 20	B2
Cluster 21	B1

FIGURE A1.2 Dendrogram Using Average Linkage - JackfishBay1975



Cluster 57 - Stations 77

FIGURE A1.3 Dendrogram Using Average Linkage - JackfishBay1987

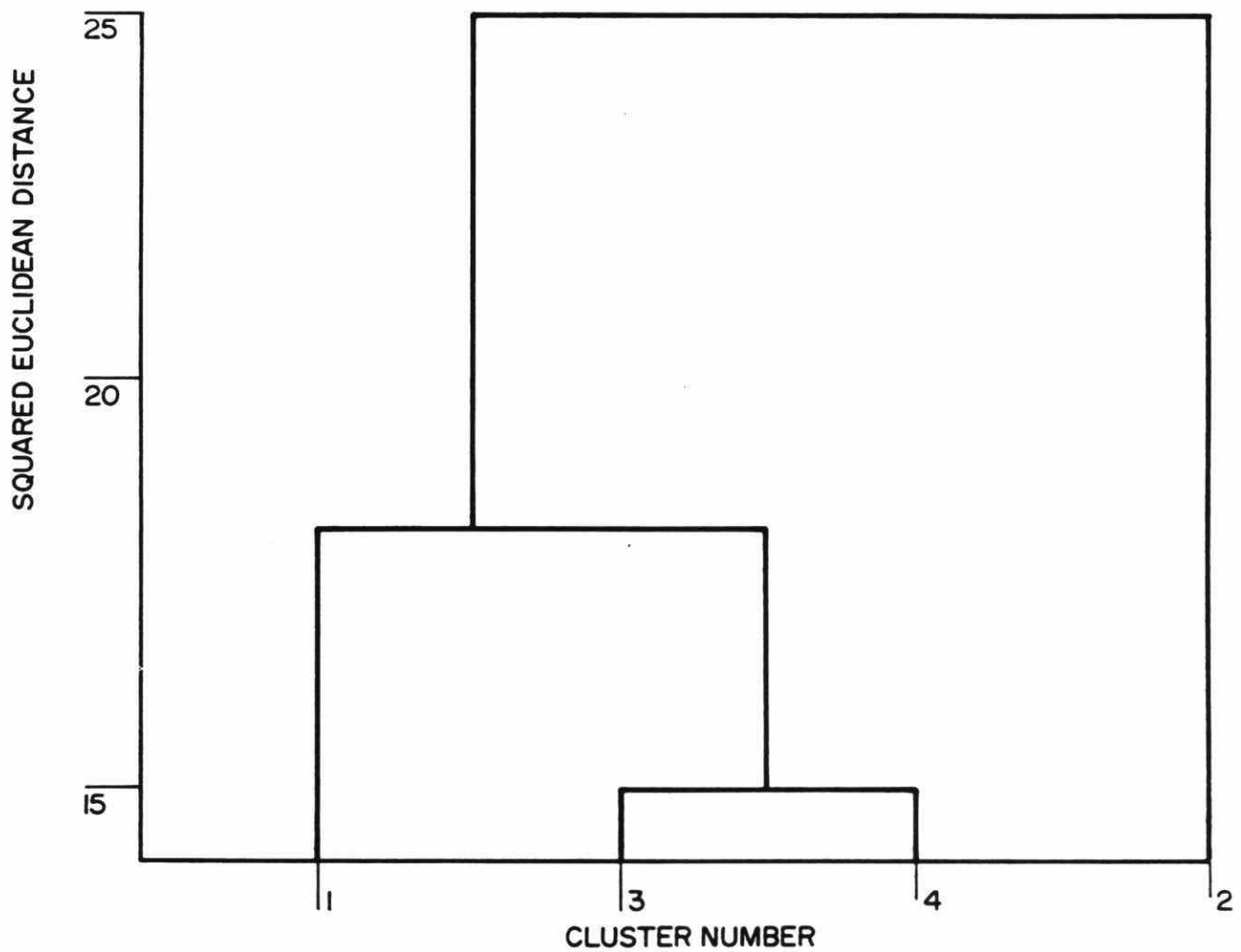


[illegible]

FIGURE A1.4

Dendrogram of Benthic Community Clusters in Jackfish Bay, 1969

See following page for station membership designation.



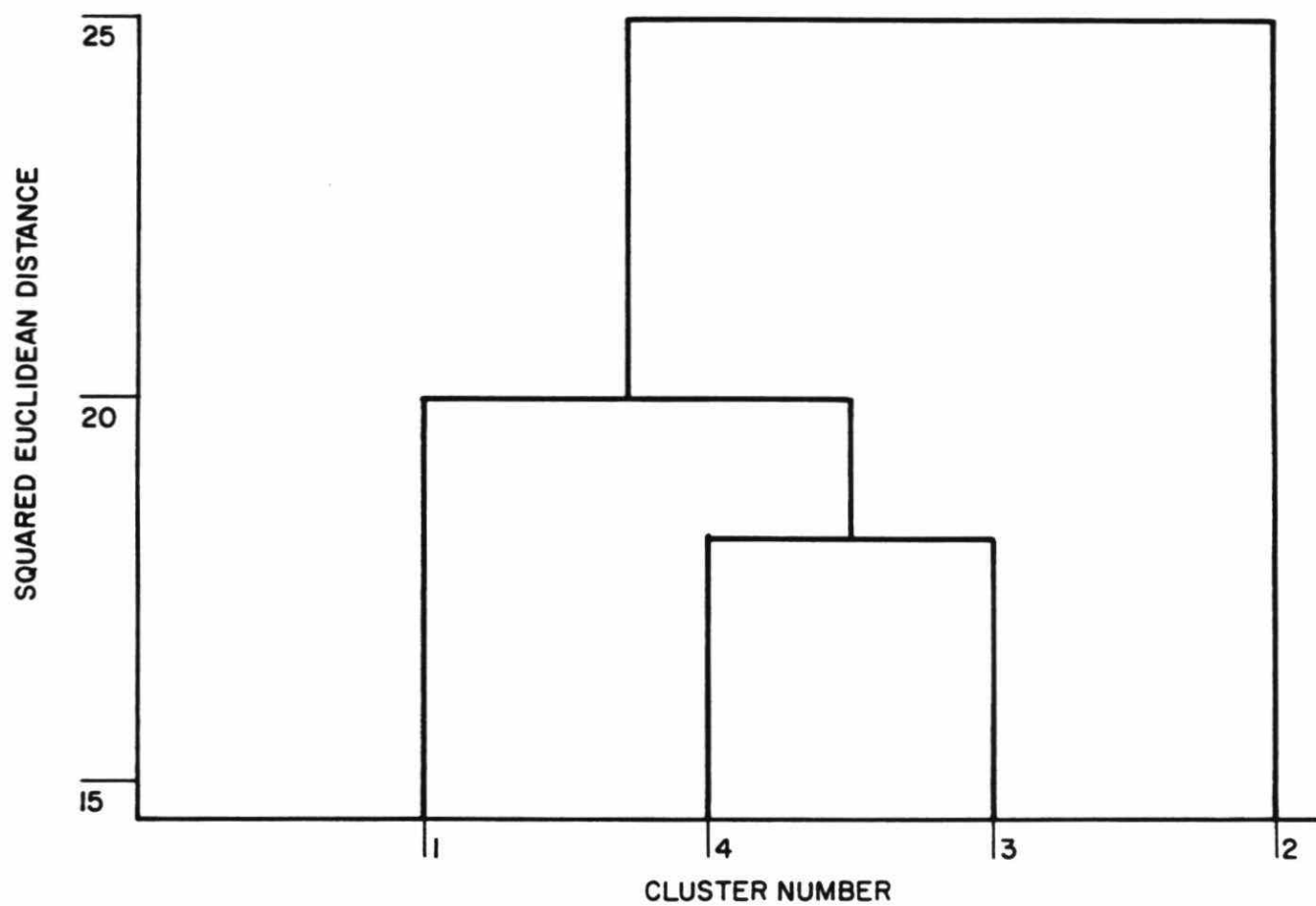
**STATION MEMBERSHIPS IN
1969 BENTHIC COMMUNITY CLUSTERS**

Cluster Number	Jackfish Bay Station Numbers
<hr/>	
1	A1, A2, A4, A8, B1, B2, C1, C2, C3, C5, D1, E1, E2, F3, F4, F5, G5, H4, I6, I7
2	A3, A5, A6, A7, B3, B4, B5, B6, C4, C6, C7, D2, D3, D4, D5, D7, F2, G1, G2, H1, H2, I1, I2, J1, J2, K5, Q1
3	B7, D6, E3, E4, E5, E7, F1, P3, S1, S2, S3
4	E6, G3, G4, G6, G7, G8, G9, H3, H6, H7, H8, H9, I3, I4, I5, I8, I9, J3, J4, J5, J6, J7, J8, K1, K2, K3, K4, L1, L2, L3, L4, M1, M2, M3, M4, M5, N1, N2, N3, O1, O2, O3, P1, P2, Q2, Q3, Q4, R1, R2, R3,

FIGURE A1.5

Dendrogram of Benthic Community Clusters in Jackfish Bay, 1975

See following page for station membership designation.



**STATION MEMBERSHIP IN
1975 BENTHIC COMMUNITY CLUSTERS**

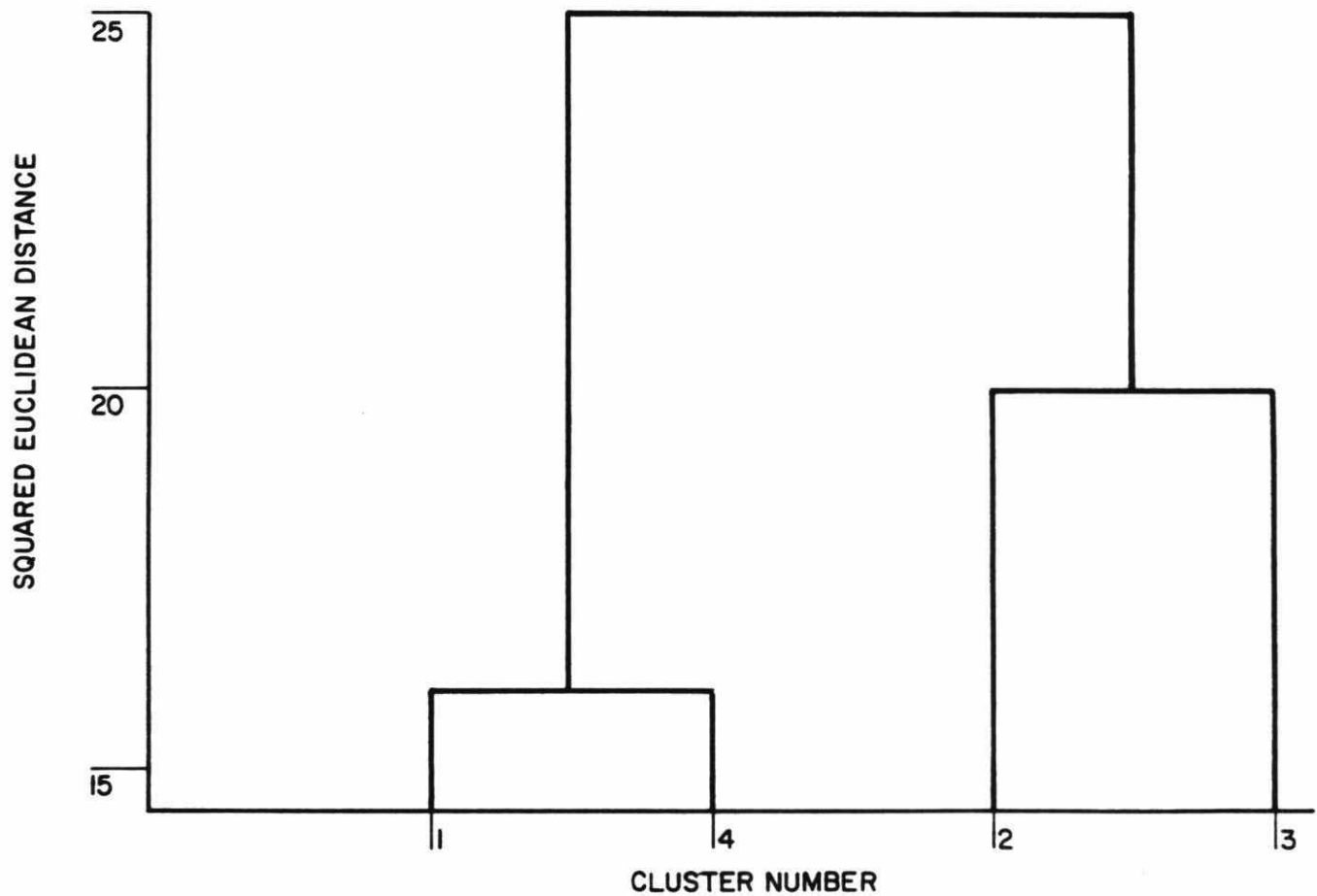
Cluster Number	Jackfish Bay Station Numbers
----------------	------------------------------

1	1, 2, 3, 4, 12, 13, 15, 18, 19, 20, 21, 24, 29, 35, 48, 52, 57, 58, 65, 66, 70, 72, 73, 74, 76, 77, 78, 82, 83, 85, 86, 87, 88, 92, 95, 96, 97, 98, 107, 108, 111, 123, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 153, 156, 157, 158, 159, 160, 161, 165, 166, 170, 171, 174, 175, 176, 177, 178, 182, 183, 184, 185, 186, 187, 187A, 188, 190, 191, 192, 193, 198, 199, 201, 205, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 219, 220, 221, 222
2	5, 6, 7, 8, 9, 10, 11, 40, 41, 42, 45, 46, 47, 49, 50, 55, 56, 59, 61, 84, 90, 91, 93, 99 100, 101, 102, 104, 114,
3	14, 22, 25, 28, 32, 33, 34, 37, 38, 43, 44, 53, 62, 63, 64, 105, 113, 115, 117, 121, 122, 126, 127, 152, 154, 155, 169, 189, 200, 203, 204,
4	16, 23, 26, 27, 30, 31, 36, 69, 71, 75, 80, 81, 94, 103, 106, 112, 116, 118, 119, 120, 124, 125, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 163, 164, 167, 172, 173, 194, 195, 196, 197, 202

FIGURE A1.6

Dendrogram of Benthic Community
Clusters in Jackfish Bay, 1987

See following page for station membership designation.



**STATION MEMBERSHIP IN
1987 BENTHIC COMMUNITY CLUSTERS**

Cluster Number	Jackfish Bay Station Numbers
1	0, 1, 7, 13, 14, 15, 16, 18, 19, 20, 22, 23, 26, 27, 30, 31, 33, 34, 35, 36, 38, 42, 43, 44, 50, 55, 59, 69, 80, 86, 89, 103, 106, 113, 116, 119, 123, 127, 130, 133, 135, 136, 137, 138, 141, 149, 152, 153, 156, 159, 163, 164, 167, 172, 173, 176, 185, 188, 192, 195, 197, 200, 207, 208, 209, 210, 211, 212, 213, 214, 215
2	2, 3, 4, 5, 9, 45, 51, 52, 56, 57, 58, 73, 83, 90, 93, 96, 99, 100
3	10, 11, 32, 37, 40, 41, 46, 63
4	126, 203, 204, 205

APPENDIX 2

Sediment and Water Quality Results

Table A2-1: Physical Characteristics of Jackfish Bay in 1969

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG.	ODOUR	OIL
		E-W	N-S						
A1	273	1	1	0.6	4	3	0	1	0
A2	274	1	2	1.2	4	3	0	1	0
A3	275	1	3	9.8	6	1	0	1	0
A4	276	1	4	16.5	8	1	0	0	0
A5	277	1	6	4.6	6	0	0	0	0
A6	278	1	7	7.6	6	0	0	0	0
A7	279	1	8	9.4	4	0	0	0	0
A8	280	1	9	7.3	4	0	0	0	0
B1	281	2	2	0.9	6	3	0	1	0
B2	282	2	3	14	0	3	0	1	0
B3	283	2	4	18.3	8	1	0	1	0
B4	284	2	6	18	7	1	0	0	0
B5	285	2	7	14.9	7	1	0	0	0
B6	286	2	8	10.7	6	0	0	0	0
B7	287	2	9	13.4	8	0	0	0	0
C1	288	3	2	1.5	6	1	0	1	0
C2	289	3	3	14	0	3	0	1	0
C3	290	3	4	19.5	8	1	0	0	0
C4	291	3	5	18.9	10	1	0	0	0
C5	292	3	6	18	7	1	0	0	0
C6	293	3	7	20.4	8	1	0	0	0
C7	294	3	8	18.6	8	0	0	0	0
D1	295	4	2	1.5	8	1	0	1	0
D2	296	4	3	9.4	9	5	0	0	0
D3	297	4	4	14	10	1	0	0	0
D4	298	4	5	11.6	8	1	0	0	0
D5	299	4	6	11	7	1	0	0	0
D6	300	4	7	10.4	6	0	0	0	0
D7	301	4	8	16.5	8	0	0	0	0
E1	302	5	2	1.5	6	0	0	0	0
E2	303	5	3	3	8	0	0	0	0
E3	304	5	4	3.7	8	0	0	0	0
E4	305	5	6	3.7	6	0	0	0	0
E5	306	5	7	7.3	6	0	0	0	0
E6	307	5	8	7.3	8	0	0	0	0
E7	308	5	9	8.2	8	0	0	0	0
F1	309	1	11	23.8	10	0	0	0	0
F2	310	1	12	33.2	3	0	0	0	0
F3	311	1	13	26.2	7	0	0	0	0
F4	312	1	14	30.8	8	0	0	0	0
F5	313	1	15	9.4	8	0	0	0	0
G1	314	2	10	31.7	10	0	0	0	0
G2	315	2	11	35.7	10	0	0	0	0
G3	316	2	12	35.7	8	0	0	0	0
G4	317	2	13	33.2	11	0	0	0	0
G5	318	2	14	33.8	10	0	0	0	0
G6	319	2	15	40.2	10	0	0	0	0

Table A2-1: Physical Characteristics of Jackfish Bay in 1969

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG.	ODOUR	OIL
		E-W	N-S						
G7	320	2	16	45.4	11	0	0	0	0
G8	321	2	17	35.7	5	0	0	0	0
G9	322	2	18	53.6	8	0	0	0	0
H1	323	3	10	33.8	10	0	0	0	0
H2	324	3	11	36.9	10	0	0	0	0
H3	325	3	12	40.8	10	0	0	0	0
H4	326	3	13	47.9	10	0	0	0	0
H5	327	3	14	45.7	10	0	0	0	0
H6	328	3	15	25.3	11	0	0	0	0
H7	329	3	16	30.8	6	0	0	0	0
H8	330	3	17	35.4	6	0	0	0	0
H9	331	3	18	52.4	6	0	0	0	0
I1	332	4	10.3	23.8	11	0	0	0	0
I2	333	4	11.1	37.8	11	0	0	0	0
I3	334	4	12.1	41.5	11	0	0	0	0
I4	335	4	13.1	40.5	11	0	0	0	0
I5	336	4	14.1	42.7	11	0	0	0	0
I6	337	4	15.1	23.8	6	0	0	0	0
I7	338	4	16.1	20.1	4	0	0	0	0
I8	339	4	17.1	36	11	0	0	0	0
I9	340	4	18	70.1	11	0	0	0	0
J1	341	4	10.2	26.2	10	0	0	0	0
J2	342	4	11.2	45.5	10	0	0	0	0
J3	343	4	12.2	17.1	10	0	0	0	0
J4	344	4	13.2	37.5	11	0	0	0	0
J5	345	4	14.2	44.2	11	0	0	0	0
J6	346	4	15.2	9.4	6	0	0	0	0
J7	347	4	16.2	11	6	0	0	0	0
J8	348	4	17.2	13.7	6	0	0	0	0
K1	349	4	10.1	22.9	10	0	0	0	0
K2	350	5	11.1	19.2	6	0	0	0	0
K3	351	5	12.1	22.3	7	0	0	0	0
K4	352	5	13.1	38.7	10	0	0	0	0
K5	353	5	14	20.7	10	4	0	0	0
L1	354	4	9	9.1	10	0	0	0	0
L2	355	5	11.2	15.8	8	0	0	0	0
L3	356	5	12.2	16.5	8	0	0	0	0
L4	357	5	13.2	24.4	10	0	0	0	0
M1	358	20	20	5.2	6	0	0	0	0
M2	359	20	20	29.3	10	0	0	0	0
M3	360	20	20	30.8	10	0	0	0	0
M4	361	20	20	12.8	4	0	0	0	0
N1	362	20	20	25.9	10	0	0	0	0
N2	363	20	20	24.4	10	0	0	0	0
N3	364	20	20	2.4	6	0	0	0	0
O1	365	20	20	17.1	11	0	0	0	0
O2	366	20	20	19.5	11	0	0	0	0

Table A2-1: Physical Characteristics of Jackfish Bay in 1969

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG.	ODOUR	OIL
		E-W	N-S						
Q3	367	20	20	5.2	7	0	1	0	0
P1	368	20	20	13.7	11	0	0	0	0
P2	369	20	20	26.2	11	0	0	0	0
P3	370	20	20	3	8	0	0	0	0
Q1	371	20	20	6.7	10	0	0	0	0
Q2	372	20	20	32.9	10	0	0	0	0
Q3	373	20	20	34.1	10	0	0	0	0
Q4	374	20	20	32	9	0	0	0	0
R1	375	20	20	21.3	9	0	0	0	0
R2	376	20	20	20.1	10	0	0	0	0
R3	377	20	20	8.5	9	0	0	0	0
S1	378	20	20	1.5	8	0	1	0	0
S2	379	20	20	1.8	8	0	1	0	0
S3	380	20	20	1.5	8	0	1	0	0

Table A2-2: Physical Characteristics of Jackfish Bay in 1975

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
		E-W	N-S						
1	76	2	1	6	0	3	0	1	0
2	77	2	2	15	9	2	0	0	0
3	78	2	3	20	8	4	0	0	0
4	79	2	4	17	8	4	0	0	0
5	80	2	5	9	8	4	0	0	0
6	81	2	6	6	5	0	0	0	0
7	82	2	7	3.5	4	0	0	0	0
8	83	1	2	5.5	0	3	0	0	0
9	84	1	3	2.5	4	0	0	0	0
10	85	1	4	15	8	2	0	0	0
11	86	1	5	7	7	1	0	0	0
12	87	1	6	3.5	8	4	0	1	0
13	88	12	4	6	8	0	1	0	0
14	89	12	5	18	8	0	0	0	0
15	90	12	6	18	6	0	0	0	0
16	91	12	7	21	6	0	0	0	0
17	92	11	4	3	6	0	0	0	0
18	93	11	5	17	6	0	0	0	0
19	94	11	6	16	10	0	0	0	0
20	95	11	7	18	6	0	0	0	0
21	96	10	4	13	6	0	0	1	0
22	97	10	5	18	6	4	0	0	0
23	98	10	6	19	6	0	0	0	0
24	99	10	7	20	6	0	0	0	0
25	100	9	5	10	8	0	0	1	0
26	101	9	6	18	8	0	0	0	0
27	102	9	7	17	6	0	0	0	0
28	103	8	4	4.5	8	0	0	0	0
29	104	8	5	9	4	0	0	0	0
30	105	8	6	12.5	4	0	0	0	0
31	106	8	7	18	4	0	0	0	0
32	107	7	3	3	4	0	0	0	0
33	108	7	4	5	6	0	0	0	0
34	109	7	5	9	8	0	0	0	0
35	110	7	6	13	8	0	0	0	0
36	111	7	7	23	4	0	0	0	0
37	112	6	3	6.5	4	0	0	0	0
38	113	6	4	6	6	0	0	0	0
39	114	6	5	3	1	0	0	0	0
40	115	6	6	24	8	0	0	0	0
41	116	6	7	23	8	0	0	0	0
42	117	5	2	3	4	0	0	0	0
43	118	5	3	5.5	4	0	0	0	0
44	119	5	4	9	8	0	0	0	0
45	120	5	5	10.5	6	0	0	0	0
46	121	5	6	21	7	0	0	0	0
47	122	5	7	24	8	0	0	0	0

Table A2-2: Physical Characteristics of Jackfish Bay in 1975

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
		E-W	N-S						
48	123	4	1	1	6	4	0	1	1
49	124	4	2	3	6	0	0	0	0
50	125	4	3	15	10	4	0	0	0
51	126	4	4	19	10	4	0	1	1
52	127	4	5	19	10	4	0	0	0
53	128	4	6	10	4	0	0	0	0
55	130	3	1	3	4	0	0	1	0
56	131	3	2	10.5	8	4	0	0	0
57	132	3	3	19	8	4	0	1	1
58	133	3	4	17	10	4	0	0	0
59	134	3	5	11	10	4	0	0	0
61	136	3	7	4	3	0	0	0	0
62	137	2	8	3	6	0	0	0	0
63	138	2	9	24	6	0	0	0	0
64	139	2	10	21	4	0	0	0	0
65	140	2	11	14	4	0	0	0	0
66	141	2	12	16	11	0	0	0	0
69	144	12	8	14	9	0	0	0	0
70	145	12	9	17	6	0	0	0	0
71	146	12	10	34.7	7	0	0	0	0
72	147	12	11	42.1	10	0	0	0	0
73	148	12	12	45.7	10	4	0	0	0
74	149	12	13	49.4	8	0	0	0	0
75	150	12	14	38.4	4	0	0	0	0
76	151	12	15	18.3	8	0	0	0	0
77	152	12	16	31.1	11	0	0	0	0
78	153	12	17	29.3	8	0	0	0	0
80	155	10	9	22	6	0	0	0	0
81	156	10	10	36.6	10	0	0	0	0
82	157	10	11	40.2	10	0	0	0	0
83	158	10	12	38.4	10	4	0	0	0
84	159	10	13	43.9	8	0	0	0	0
85	160	10	14	51.2	8	0	0	0	0
86	161	10	15	36.6	8	0	0	0	0
87	162	10	16	29.3	8	0	0	0	0
88	163	10	17	32.9	8	0	0	0	0
89	164	8	8	30	10	0	0	0	0
90	165	8	9	39	8	0	0	0	0
91	166	8	10	38.4	10	1	0	0	0
92	167	8	11	40.2	10	0	0	0	0
93	168	8	12	43	10	0	0	0	0
94	169	8	13	43.9	8	1	0	0	0
95	170	8	14	49.4	8	0	0	0	0
96	171	8	15	42.1	8	0	0	0	0
97	172	8	16	29.3	8	0	0	0	0
98	173	8	17	36.6	11	0	0	0	0
99	174	6	8	38	10	0	0	0	0

Table A2-2: Physical Characteristics of Jackfish Bay in 1975

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
		E-W	N-S						
100	175	6	9	36	8	0	0	0	0
101	176	6	10	34.7	10	1	0	0	0
102	177	6	11	38.4	10	0	0	0	0
103	178	6	12	38.4	10	0	0	0	0
104	179	6	13	34.7	8	1	0	0	0
105	180	6	14	34.7	8	0	0	0	0
106	181	6	15	32.9	8	0	0	0	0
107	182	6	16	36.6	11	0	0	0	0
108	183	6	17	43.9	8	0	0	0	0
109	184	4	8	10	0	3	0	0	0
110	185	4	9	12	1	0	0	0	0
111	186	4	10	24	11	0	0	0	0
112	187	4	11	28	6	1	0	0	0
113	188	4	12	28	4	0	0	0	0
114	189	4	13	26	8	0	0	0	0
115	190	4	14	31	8	0	0	0	0
116	191	4	15	31.1	8	0	0	0	0
117	192	4	16	27.4	11	0	0	0	0
118	193	20	20	15.5	8	0	0	0	0
119	194	20	20	27.4	8	0	0	0	0
120	195	20	20	27.4	8	0	0	0	0
121	196	20	20	6.4	6	0	1	0	0
122	197	20	20	11.9	11	0	1	0	0
123	198	20	20	18.3	8	0	0	0	0
124	199	20	20	31.1	8	0	0	0	0
125	200	20	20	23.8	8	0	0	0	0
126	201	20	20	11	8	4	0	0	0
127	202	20	20	4	4	0	1	0	0
128	203	20	20	25.6	4	4	0	0	0
129	204	20	20	29.3	8	4	0	0	0
130	205	20	20	25.6	8	0	0	0	0
131	206	15	7	11.9	10	0	0	0	0
132	207	14	5	20.1	8	4	0	0	0
133	208	14	6	29.3	8	0	0	0	0
134	209	14	7	25.6	10	0	0	0	0
135	210	13	4	18.3	8	4	0	0	0
136	211	13	5	25.6	8	4	0	0	0
137	212	13	6	25.6	8	0	0	0	0
138	213	13	7	29.3	8	0	0	0	0
139	214	17	13	7	6	0	0	0	0
140	215	17	14	7	6	0	0	0	0
141	216	17	15	9	8	0	0	0	0
142	217	17	16	13.7	4	0	0	0	0
143	218	17	17	27.4	6	0	0	0	0
144	219	16	10	4	4	0	0	0	0
145	220	16	11	4	6	0	0	0	0
146	221	16	12	6.4	8	0	0	0	0

Table A2-2: Physical Characteristics of Jackfish Bay in 1975

STATION Bio-coll.		TRANSECT		DEPTH	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
#	#	E-W	N-S	(m)					
147	222	16	13	10	6	0	0	0	0
148	223	16	14	11.9	6	0	0	0	0
149	224	16	15	12	6	0	0	0	0
150	225	16	16	17.4	4	0	0	0	0
151	226	16	17	34.7	8	0	0	0	0
152	227	15	8	8	8	0	1	0	0
153	228	15	9	6	4	0	0	0	0
154	229	15	10	27.4	6	0	0	0	0
155	230	15	11	23.8	6	0	0	0	0
156	231	15	12	9	4	0	0	0	0
157	232	15	13	9	6	0	0	0	0
158	233	15	14	14.5	6	0	0	0	0
159	234	15	15	17.4	4	0	0	0	0
160	235	15	16	20.1	4	0	0	0	0
161	236	15	17	31.1	8	4	0	0	0
163	238	14	8	37	7	0	0	0	0
164	239	14	9	39	8	0	0	0	0
165	240	14	10	38.4	10	4	0	0	0
166	241	14	11	42.1	10	0	0	0	0
167	242	14	12	21.9	4	0	0	0	0
169	244	14	15	16	3	0	0	0	0
170	245	14	16	20.1	4	0	0	0	0
171	246	14	17	25.6	11	0	0	0	0
172	247	13	8	28	7	0	0	0	0
173	248	13	9	37	8	0	0	0	0
174	249	13	10	43.9	7	0	0	0	0
175	250	13	11	43.9	10	0	0	0	0
176	251	13	12	42.1	10	0	0	0	0
177	252	13	13	29.3	6	0	0	0	0
178	253	13	15	9	3	0	0	0	0
180	255	13	17	27.4	3	0	0	0	0
182	257	19	15	5.5	4	0	0	0	0
183	258	19	16	8.2	4	0	0	0	0
184	259	19	17	11.9	4	0	0	0	0
185	260	18	15	8.2	4	0	0	0	0
186	261	18	16	11.9	4	0	0	0	0
187A	262	18	17	14.6	4	0	0	0	0
187	263	20	20	15	8	0	0	0	0
188	264	20	20	21	8	0	0	0	0
189	265	20	20	17.4	4	0	1	0	0
190	266	20	20	29.3	8	4	0	0	0
191	267	20	20	27.4	8	4	0	0	0
192	268	20	20	31.1	8	4	0	0	0
193	269	20	20	32.9	8	4	0	0	0
194	270	20	20	31.1	8	4	0	0	0
195	271	20	20	18.3	8	4	0	0	0
196	272	20	20	13.7	8	0	1	0	0

Table A2-2: Physical Characteristics of Jackfish Bay in 1975

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
		E-W	N-S						
197	273	20	20	15.5	8	4	0	0	0
198	274	20	20	23.8	8	4	0	0	0
199	275	20	20	21.9	10	0	0	0	0
200	276	20	20	20.1	8	0	0	0	0
201	277	20	20	20.1	6	0	0	0	0
202	278	20	20	11.9	6	0	0	0	0
203	279	20	20	1	7	0	1	0	0
204	280	20	20	1.5	4	0	1	0	0
205	281	20	20	19	7	4	0	0	0
207	283	6	18	43.9	10	4	0	0	0
208	284	8	18	36.6	11	0	0	0	0
209	285	10	18	31.1	11	0	0	0	0
210	286	12	18	32.9	6	0	0	0	0
211	287	13	18	34.7	6	0	0	0	0
212	288	14	18	58.5	8	0	0	0	0
213	289	15	18	49.4	8	0	0	0	0
214	290	16	18	42.1	6	0	0	0	0
215	291	17	18	32.9	8	0	0	0	0
216	292	18	18	16.5	3	0	0	0	0
217	293	19	18	12.8	3	0	0	0	0
219	295	6	19	40.2	10	1	0	0	0
220	296	8	19	31.1	11	0	0	0	0
221	297	10	19	31.1	11	0	0	0	0
222	298	12	19	31.1	11	0	0	0	0

- qualitative sample

Table A2-3: Physical Characteristics of Jackfish Bay in 1987

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
E-W	N-S								
0	1	1	1	0.5	4	0	0	0	1
1	2	2	2	2	6	0	0	0	1
2	3	2	3	17	10	3	0	1	1
3	4	2	4	17.5	10	3	0	1	1
4	5	2	4	21.5	10	1	0	0	0
5	6	2	5	17.5	10	0	0	1	1
6	7	2	5	17.5	0	3	0	1	1
7	8	2	6	17	10	2	0	0	1
8	10	2	8	10	10	0	0	0	1
9	11	1	3	11	6	0	0	0	0
10	12	1	4	16.5	10	2	0	0	1
11	14	1	5	16.5	6	4	0	1	1
12	15	1	6	12	8	4	0	0	0
13	16	1	7	6	5	0	0	0	0
14	17	12	5	9	6	0	0	0	0
15	18	12	6	18.5	7	0	0	0	0
16	19	12	7	20	7	0	0	0	0
17	20	12	8	22.5	7	0	0	0	0
18	22	11	6	19.5	6	0	0	0	0
19	23	11	7	18	7	0	0	0	0
20	24	11	8	19.5	7	0	0	0	0
21	26	10	6	18.5	6	0	0	0	0
22	27	10	7	18	6	0	0	0	0
23	28	10	8	20.5	4	0	0	0	0
24	29	9	6	9.5	11	0	0	0	0
25	30	9	7	19	8	0	0	0	0
26	31	9	8	19	8	0	0	0	0
27	32	8	5	7	4	0	0	0	0
28	33	8	6	10	4	0	0	0	0
29	34	8	7	13	6	0	0	0	0
30	35	8	8	17	8	0	0	0	0
31	36	7	4	8	4	0	0	0	0
32	37	7	5	8.5	6	4	0	0	0
33	38	7	6	7	8	0	0	0	0
34	39	7	7	12.5	10	0	0	0	0
35	40	7	8	26	8	4	0	0	0
36	41	6	4	5.5	6	0	0	0	0
37	42	6	5	6.5	6	0	0	0	0
38	43	6	6	5.5	1	0	0	0	0
39	44	6	7	24	8	0	0	0	0
40	45	6	8	28	8	2	0	1	0
41	46	5	3	2.5	8	0	0	0	0
42	47	5	4	4	5	0	0	0	0
43	48	5	5	7	8	0	0	0	0
44	49	5	6	19.5	10	2	0	1	0
45	50	5	7	17.3	6	0	0	0	0
46	51	5	8	12.5	5	0	0	0	0

Table A2-3: Physical Characteristics of Jackfish Bay in 1987

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
		E-W	N-S						
#48	52	4	2	2	4	0	0	0	0
#49	53	4	3	4	4	0	0	0	0
50	54	4	4	14.5	6	2	0	0	0
51	55	4	5	20.5	10	2	0	1	1
52	56	4	6	22	10	2	0	1	1
#53	57	4	7	14	2	0	0	0	0
55	59	3	2	3	8	0	0	0	0
56	60	3	3	13	10	4	0	0	0
57	61	3	4	20	10	4	0	0	0
58	62	3	5	18.5	10	2	0	0	0
59	63	3	6	14	6	2	0	0	0
#60	64	3	7	5.5	1	0	0	0	0
#61	65	3	8	7.5	3	0	0	0	0
63	67	2	10	23	6	4	0	0	0
#66	68	2	13	15	4	0	0	0	0
69	69	12	9	13	6	4	0	0	0
#70	70	12	10	20.5	6	0	0	0	0
73	71	12	13	52	10	0	0	0	0
#76	72	12	16	16.5	2	0	0	0	0
#79	73	10	9	6	1	0	0	0	0
80	74	10	10	20	10	0	0	0	0
83	75	10	13	50	10	0	0	0	1
86	76	10	16	39	10	0	0	0	0
89	77	8	9	37	10	0	0	0	0
90	78	8	10	45	10	2	0	0	1
93	79	8	13	46.5	10	0	0	0	0
96	80	8	16	50	10	0	0	0	0
99	81	6	9	41.5	10	0	0	0	1
100	82	6	10	40.5	10	2	0	0	1
103	83	6	12	43	10	0	0	0	1
106	84	6	16	31	10	0	0	0	0
113	87	4	13	37	10	4	0	0	0
#116	88	4	16	32.5	3	0	0	0	0
116	89	4	16	32.5	3	0	0	0	0
119	90	20	20	10.5	10	0	0	0	0
123	91	20	20	26	10	0	0	0	0
126	92	20	20	8	8	4	0	0	0
127	93	20	20	6	4	0	0	0	0
130	94	20	20	29	10	4	0	0	0
133	95	14	7	37.5	10	0	0	0	0
135	96	13	5	18	7	0	0	0	0
136	97	13	6	24	8	0	0	0	0
137	98	13	7	19	8	0	0	0	0
138	99	13	8	30.5	10	4	0	0	0
141	100	17	16	11	4	0	0	0	0
#146	101	16	13	8.5	1	0	0	0	0
149	102	16	16	12.5	4	0	0	0	0

Table A2-3: Physical Characteristics of Jackfish Bay in 1987

STATION #	Bio-coll. #	TRANSECT		DEPTH (m)	TEXTURE	ORGANIC CONTENT	VEG	ODOUR	OIL
		E-W	N-S						
152	103	15	9	6	4	0	0	0	0
153	104	15	10	10.5	4	0	0	0	0
156	105	15	13	10.5	3	0	0	0	0
159	106	15	16	17	6	0	0	0	0
163	107	14	9	34.5	10	4	0	0	0
164	108	14	10	35.5	10	4	0	0	0
167	109	14	13	38	8	0	0	0	0
*169	110	14	16	12	1	0	0	0	0
172	111	13	9	37.5	10	4	0	0	0
173	112	13	10	40.5	10	4	0	0	0
176	113	13	13	37	10	4	0	0	0
185	114	18	16	12.5	6	0	0	0	0
188	116	20	20	28	8	0	0	0	0
192	117	20	20	34	10	4	0	0	0
195	118	20	20	10.5	10	0	0	0	0
197	119	20	20	18.5	10	0	0	0	0
200	120	20	20	17.5	10	0	0	0	0
203	121	20	20	2	10	0	1	0	0
204	122	20	20	2	7	0	1	0	0
205	123	20	20	2	7	0	1	1	0
207	124	6	19	43	4	0	0	0	0
208	125	8	19	40	8	0	0	0	0
209	126	10	19	40	11	0	0	0	0
210	127	12	19	37.55	8	0	0	0	0
211	128	13	19	36.5	11	0	0	0	0
212	129	14	19	34.5	4	0	0	0	0
213	130	15	19	38	4	0	0	0	0
214	131	16	19	45	11	0	0	0	0
215	132	17	19	38	8	0	0	0	0

* - qualitative sample

TABLE A2.4: SEDIMENT QUALITY DATA FOR 1969 SURVEY
(samples collected in August 1970)

Stations	Percent Organic Matter	Mercury (mg/kg)
C2	3.0	0.051
C6	17.6	0.10
A8	6.0	0.031
C8	7.2	0.029
E7	0.9	0.02
F2	10.2	0.03
I3	5.5	0.12
J3	1.4	0.02
K3	3.6	0.031
G3	5.0	0.11
I5	4.9	0.14
J5	5.1	0.018

Table A2-5: Jackfish Bay Sediment Quality Data for 1975

STATION	#	3	6	15	23	30	37	40	50	53	63
Bio-coll.	#	78	81	90	98	105	112	115	125	128	138
Cu	(ppm)	13	26	10	17	12	5	11	28	24	4.2
Ni	(ppm)	15	36	14	22	14	7	14	19	30	12
Pb	(ppm)	6	4	5.5	7.5	4.5	-3	-3	12	5	-3
Zn	(ppm)	34	64	37	34	40	26	34	40	56	24
Mn	(ppm)	170	380	340	1190	350	140	160	220	480	200
As	(ppm)	1.6	3	3.2	3.8	3	5.9	1.4	2.9	2.9	2.8
Cd	(ppm)	-0.25	-0.25	0.3	0.75	0.3	-0.25	-0.25	0.6	-0.25	-0.25
Co	(ppm)	6.2	14	5	8.5	6	3	5.5	7	11	4.8
Hg	(ppm)	0.02	0.01	0.01	0.02	0.03	0.01	0.01	0.07	0.01	-0.01
V	(ppm)	34	64	37	34	40	26	34	40	56	24
Cr	(ppm)	-	-	-	-	-	-	-	-	-	-
Fe	(mg/g)	14.4	38.6	16.7	17.3	19.8	12.2	16.6	16.4	30.9	13.2
K	(mg/g)	0.71	4.4	0.44	0.78	0.68	0.36	1.1	1.4	3.8	0.46
COD	(mg/g)	30	15	14	24	15	12	10	90	14	6.5
SD4	(mg/g)	0.34	0.09	0.09	0.13	0.17	0.06	0.17	0.8	0.11	0.07
LOI		2	2.9	-1	1.8	1.1	-1	-1	5.6	2.6	-1
P	(mg/g)	0.71	0.58	0.96	0.72	1	0.47	0.78	0.8	0.57	0.41
TKN	(mg/g)	0.78	0.51	0.32	0.42	0.32	0.35	0.17	1.4	0.42	0.14
Ca	(mg/g)	-	-	-	-	-	-	-	-	-	-

STATION	#	66	70	73	76	80	83	86	90	93	96
Bio-coll.	#	141	145	148	151	155	158	161	165	168	171
Cu	(ppm)	26	12	41	24	15	59	10	47	57	34
Ni	(ppm)	32	13	22	30	15	30	14	24	28	22
Pb	(ppm)	4	3.5	20	6.5	9	4	-3	24	28	19
Zn	(ppm)	53	30	45	53	30	52	30	89	98	68
Mn	(ppm)	500	240	940	450	340	300	330	460	870	370
As	(ppm)	2.8	1.8	5.5	2.3	3	1	1.8	5.8	7.2	3.2
Cd	(ppm)	-0.25	-0.25	0.5	-0.25	0.3	1	-0.25	0.75	0.9	0.5
Co	(ppm)	12	5.5	9	11	6.5	10	5	9	11	8.5
Hg	(ppm)	0.01	0.01	0.04	0.01	0.03	0.08	0.01	0.06	0.07	0.06
V	(ppm)	53	30	45	53	30	52	38	46	50	42
Cr	(ppm)	-	-	-	-	-	-	-	-	-	-
Fe	(mg/g)	30.2	13.3	23.4	22.9	16.3	28.2	18.3	25.4	26.5	21.8
K	(mg/g)	3.4	0.64	1.8	3.8	0.69	2.3	0.82	1.8	1.9	1.4
COD	(mg/g)	9.5	12	50	15	20	120	20	97	90	50
SD4	(mg/g)	0.06	0.12	0.1	0.12	0.16	0.29	0.29	0.55	0.32	0.37
LOI		3.5	-1	4.5	3.3	1.6	7.9	1	5.9	6	4.2
P	(mg/g)	0.47	0.68	0.94	0.57	0.82	1.1	1.1	0.96	1.1	1
TKN	(mg/g)	0.42	0.34	1.2	0.45	0.55	2.6	0.37	1.6	1.6	0.94
Ca	(mg/g)	-	-	-	-	-	-	-	-	-	-

‡ - qualitative sample

-# - detection limit

Table A2-5: Jackfish Bay Sediment Quality Data for 1975

STATION	#	100	103	106	110	113	116	119	123	126	127
Bio-coll.	#	175	178	181	185	188	191	194	198	201	202
Cu	(ppm)	19	20	24	4.5	11	15	46	13	12	28
Ni	(ppm)	18	16	20	10	19	18	26	18	14	37
Pb	(ppm)	7.5	8.5	10	-3	2.5	7	94	4	10	5.5
Zn	(ppm)	46	48	52	34	36	41	92	34	42	68
Mn	(ppm)	420	270	680	230	220	300	660	540	180	520
As	(ppm)	2.1	2.8	3.2	1.8	1.4	1.4	9.6	1.8	3.2	3.2
Cd	(ppm)	0.15	0.25	0.1	-0.1	-0.2	-0.2	0.85	-0.2	0.1	-0.2
Co	(ppm)	7	6	7	4.5	5.5	7	10	6	14	8
Hg	(ppm)	0.03	0.05	0.04	0.01	0.01	0.02	0.06	0.01	0.04	0.03
V	(ppm)	39	36	40	22	34	30	50	40	29	66
Cr	(ppm)	-	-	-	-	-	-	-	-	-	-
Fe	(mg/g)	18.2	17.3	21.3	11.6	18	16.1	27	17.7	15.6	35
K	(mg/g)	0.93	0.76	1.7	0.39	1.2	0.7	1.8	0.89	0.49	4.6
COD	(mg/g)	40	33	34	6.5	10	15	82	16	30	12
SD4	(mg/g)	0.32	0.34	0.42	0.08	0.09	0.08	0.2	0.07	0.1	0.03
LOI		3.1	2.7	5	1.1	2.2	1.7	6.1	5.5	3.9	6
P	(mg/g)	1.3	1.1	0.91	0.79	0.74	0.8	1	0.87	0.6	0.57
TKN	(mg/g)	0.79	0.81	0.94	0.27	0.43	0.37	1.7	0.56	0.6	0.38
Ca	(mg/g)	-	-	-	-	-	-	-	-	-	-

STATION	#	130	133	137	141	146	149	153	156	159	164
Bio-coll.	#	205	208	212	216	221	224	228	231	234	239
Cu	(ppm)	18	24	27	24	22	5	5.8	8.5	7	28
Ni	(ppm)	19	20	20	30	27	12	12	16	14	20
Pb	(ppm)	8	10	13	7.5	5	-3	-3	-3	-3	9
Zn	(ppm)	44	51	52	58	52	20	20	28	22	50
Mn	(ppm)	440	380	440	500	500	150	140	220	200	440
As	(ppm)	2.4	2.5	2.5	2.4	2.4	0.77	0.92	1.5	0.95	2.5
Cd	(ppm)	-0.2	0.25	0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.25
Co	(ppm)	8.5	7.5	8.5	12	11	5.5	5	6.5	5	8.5
Hg	(ppm)	0.03	0.04	0.06	0.02	0.02	-0.01	-0.01	-0.01	-0.01	0.05
V	(ppm)	42	42	43	54	54	28	31	29	25	40
Cr	(ppm)	-	-	-	-	-	-	-	-	-	-
Fe	(mg/g)	20.6	20.8	20.6	28.9	28	17.6	13	16.2	13.2	19.8
K	(mg/g)	1	0.96	0.97	3.9	3.5	0.36	0.31	0.35	0.38	1.1
COD	(mg/g)	10	35	47	10	12	5	5	5	5	42
SD4	(mg/g)	0.06	0.08	0.09	0.01	0.02	0.01	0.03	0.02	0.01	0.21
LOI		3	3.4	4.1	6.1	6.4	-1	-1	-1	-1	3.3
P	(mg/g)	0.78	0.84	0.85	0.5	0.57	0.43	0.81	0.42	0.48	0.83
TKN	(mg/g)	0.65	0.74	0.77	0.42	0.42	0.1	0.11	0.12	-0.12	0.63
Ca	(mg/g)	-	-	-	-	-	-	-	-	-	-

- qualitative sample

-# - detection limit

Table A2-5: Jackfish Bay Sediment Quality Data for 1975

STATION	#	167	173	176	185	192	195	197	200	205	207
Bio-coll.	#	242	248	251	260	268	271	273	276	281	283
Cu	(ppm)	20	33	52	17	46	22	7.5	15	46	21
Ni	(ppm)	26	22	26	18	27	20	13	18	20	16
Pb	(ppm)	3.5	18	32	-3	28	9	-3	6.5	550	9
Zn	(ppm)	46	67	88	-	92	49	26	34	490	46
Mn	(ppm)	280	450	1700	270	900	280	180	290	300	310
As	(ppm)	2.4	4.2	9.7	1	7.3	2.8	0.98	2.2	8.6	-
Cd	(ppm)	0.1	0.4	0.8	-0.2	0.75	0.15	-0.2	-0.2	0.75	-0.25
Co	(ppm)	8	9	9.5	9	10	7.5	4.5	6.5	8	6
Hg	(ppm)	0.03	0.11	0.17	-0.01	0.14	0.05	0.01	0.02	0.35	-0.05
V	(ppm)	38	42	47	-	54	39	30	36	42	42
Cr	(ppm)	-	-	-	-	-	-	-	-	-	36
Fe	(mg/g)	18.2	21.3	26	17.4	27.3	19.1	15	18.4	23	20
K	(mg/g)	0.82	1.3	2.2	0.44	2.6	1.7	1	1.3	1.9	1.2
COD	(mg/g)	20	50	75	-	85	40	15	20	110	-
SO4	(mg/g)	0.15	0.25	0.03	0.17	0.24	0.01	0.06	0.05	18	1.6
LOI		1.9	4.2	6.3	1	7.2	3.9	1.8	2.5	8.7	3.5
P	(mg/g)	0.67	0.8	1.2	0.48	1.2	0.95	1.2	1	0.96	0.89
TKN	(mg/g)	0.4	0.85	1.8	0.12	2	1.3	0.36	0.38	1.9	0.54
Ca	(mg/g)	-	-	-	-	-	-	-	-	-	4.4

STATION	#	208	209	210	211	212	213	214	215	216	217
Bio-coll.	#	284	285	286	287	288	289	290	291	292	293
Cu	(ppm)	38	19	8	11	16	11	18	12	12	16
Ni	(ppm)	35	15	9.5	9.5	17	12	14	12	17	16
Pb	(ppm)	12	5	7.5	9.5	3	2.5	7.5	7	2.5	-2
Zn	(ppm)	98	46	27	30	44	32	44	32	33	34
Mn	(ppm)	520	380	250	310	4100	320	290	240	250	300
As	(ppm)	-	-	-	-	-	-	-	-	-	-
Cd	(ppm)	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25	-0.25
Co	(ppm)	17	8.5	6	6	10	6	5	4.5	6.5	8.5
Hg	(ppm)	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05	-0.05
V	(ppm)	86	43	42	52	40	35	34	40	55	49
Cr	(ppm)	94	46	30	39	42	36	34	32	36	38
Fe	(mg/g)	47	20	19	22	34	18	16	17.8	24	22
K	(mg/g)	6.4	2.4	0.36	0.6	1.4	1	0.66	0.42	0.41	0.33
COD	(mg/g)	-	-	-	-	-	-	-	-	-	-
SO4	(mg/g)	0.15	0.25	0.23	0.28	0.55	1.3	6.5	0.4	0.1	0.1
LOI		9.5	3.7	1.2	1.4	1	1.8	1.7	1.1	1	1
P	(mg/g)	0.7	0.52	0.97	1.3	1.8	1.1	0.7	1.2	0.54	0.44
TKN	(mg/g)	0.53	0.24	0.21	0.25	0.8	0.36	0.36	0.22	0.12	0.12
Ca	(mg/g)	38	105	3.5	7	4.9	4.6	3.5	4.8	4	4

- qualitative sample

-# - detection limit

Table A2-6: Jackfish Bay Sediment Quality Data for 1987

STATION	#	1	#3	#3	3	3	5	5	15	23	23
Bio-coll.	#	2	4	4	5	5	8	8	19	27	27
layer sampled		T	T	B	T	B	T	B	T	T	B
Cu	(ug/g)	35	17	33	10	38	12	15	14	17	14
Ni	(ug/g)	22	17	20	16	22	12	15	15	14	13
Pb	(ug/g)	18	12	15	76	14	11	16	14	13	12
Zn	(ug/g)	110	43	120	34	150	38	37	37	37	32
Fe	(ug/g)	17000	15000	16000	-	15000	-	18000	15000	14000	-
Mn	(ug/g)	220	180	220	170	200	130	360	400	340	290
Al	(ug/g)	10000	9000	8900	-	9400	-	6600	6400	6600	-
As	(ug/g)	0.83	2.6	1.2	2	0.94	2.7	1.3	3	2.7	2.4
Cd	(ug/g)	0.33	-0.2	0.79	-0.2	0.85	-0.2	-0.2	-0.2	-0.2	-0.2
Co	(ug/g)	9.9	9.5	9.7	8.7	9.7	7.8	9.1	8.8	8.3	8.4
Hg	(ug/g)	0.06	0.12	0.01	0.23	0.01	0.11	0.04	0.01	0.02	0.01
K	(ug/g)	1600	1400	1200	-	1400	-	630	6000	600	-
V	(ug/g)	44	39	43	-	42	-	43	35	35	-
SO4	(ug/g)	635	270	40	-	56	-	150	14	13	-
LOI	(mg/gdry)	12	160	-5	-	18	-	12	17	5.7	-
P	(ug/g)	-	-	-	0.8	-	-	-	0.9	-	0.68
TKN	(ug/g)	-	-	-	3.2	-	-	-	-0.2	-	-0.2

STATION	#	30	30	40	40	50	50	#53	57	57	#70
Bio-coll.	#	34	34	44	44	54	54	57	61	61	70
layer sampled		T	B	T	B	T	B	T	T	B	T
Cu	(ug/g)	14	28	33	46	17	12	39	16	14	50
Ni	(ug/g)	17	17	13	25	18	15	23	18	16	25
Pb	(ug/g)	7.5	20	10	21	13	8.2	19	12	12	35
Zn	(ug/g)	30	65	38	150	51	59	120	49	41	100
Fe	(ug/g)	16000	18000	15000	-	16000	17000	19000	-	18000	23000
Mn	(ug/g)	280	370	260	240	200	530	250	210	360	390
Al	(ug/g)	9900	9400	7300	-	10000	8000	12000	-	7200	14000
As	(ug/g)	2.2	1.9	2.7	1.9	3.7	1.2	2.7	2.9	2.1	1.6
Cd	(ug/g)	-0.2	-0.2	-0.2	0.98	-0.2	-0.2	0.44	-0.2	-0.2	0.2
Co	(ug/g)	9.8	9.2	8.6	10	9.9	9.8	10	10	8.8	12
Hg	(ug/g)	0.02	-0.01	0.08	0.01	0.19	0.05	-0.01	0.23	0.02	0.01
K	(ug/g)	620	1800	1300	-	1800	1400	790	-	1600	870
V	(ug/g)	38	44	38	-	40	42	46	-	44	52
SO4	(ug/g)	17	13	32	-	720	155	100	-	140	14
LOI	(mg/gdry)	18	7	30	-	180	42	37	-	40	17
P	(ug/g)	0.74	-	0.83	-	0.82	-	-	-	-	-
TKN	(ug/g)	-0.2	-	1.1	-	3.7	-	-	-	-	-

- qualitative sample
 -# - detection limit
 T - top
 B - bottom

Table A2-6: Jackfish Bay Sediment Quality Data for 1987

STATION #	73	73	80	80	90	93	93	96	96	100
Bio-coll. #	71	71	74	74	78	79	79	80	80	82
layer sampled	T	B	T	B	T	T	B	T	B	T
Cu (ug/g)	24	12	16	45	46	60	50	20	47	17
Ni (ug/g)	26	14	18	23	24	20	25	23	25	23
Pb (ug/g)	14	11	13	30	32	11	37	12	25	12
Zn (ug/g)	54	35	42	93	93	44	100	47	120	45
Fe (ug/g)	24000	-	20000	21000	22000	-	22000	31000	21000	-
Mn (ug/g)	480	330	410	340	450	470	670	1700	310	910
Al (ug/g)	15000	-	9000	13000	14000	-	14000	13000	13000	-
As (ug/g)	4.2	2.8	2.5	2.8	5.6	5.6	1.5	5.5	5.3	3.1
Cd (ug/g)	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	0.31	-0.2	0.47	-0.2
Co (ug/g)	13	8.6	10	11	12	20	12	13	11	13
Hg (ug/g)	0.19	0.02	0.01	0.02	0.16	0.14	0.01	0.16	0.02	0.16
K (ug/g)	2400	-	830	1300	2300	-	1800	2500	2300	-
V (ug/g)	54	-	45	49	53	-	52	51	50	-
SO4 (ug/g)	69	-	15	22	90	-	28	87	24	-
LOI (mg/gdry)	65	-	14	9	77	-	15	67	18	-
P (ug/g)	0.82	-	0.66	-	0.77	-	-	-	-	-
TKN (ug/g)	1.8	-	-0.2	-	1.8	-	-	-	-	-

STATION #	100	103	103	106	106	116	119	119	123	130
Bio-coll. #	82	83	83	84	84	89	90	90	91	94
layer sampled	B	T	B	T	B	T	T	B	T	T
Cu (ug/g)	48	5.3	24	40	23	26	51	27	58	50
Ni (ug/g)	25	8.4	22	23	19	27	28	23	31	28
Pb (ug/g)	28	4.7	11	23	12	12	36	14	43	37
Zn (ug/g)	100	60	47	84	43	54	95	54	110	92
Fe (ug/g)	21000	7800	21000	-	18000	2300	27000	-	29000	26000
Mn (ug/g)	570	95	660	460	470	470	1900	670	2700	1700
Al (ug/g)	13000	4400	13000	-	11000	19000	15000	-	16000	14000
As (ug/g)	2.4	3.4	2.1	3.9	2.4	2.7	10	3.2	17	13
Cd (ug/g)	0.23	-0.2	-0.2	0.86	0.27	0.2	1.1	0.22	1.4	1.1
Co (ug/g)	11	5.7	12	11	10	13	13	12	15	14
Hg (ug/g)	0.01	0.18	0.02	0.12	0.02	0.14	0.14	0.03	0.2	0.01
K (ug/g)	1800	2200	1800	-	1500	3900	2200	-	2200	1700
V (ug/g)	49	17	51	-	46	47	54	-	59	55
SO4 (ug/g)	47	120	75	-	19	11	33	-	34	31
LOI (mg/gdry)	22	79	15	-	-	-	-	-	-	-
P (ug/g)	-	0.8	-	-	-	0.36	1.03	-	1.35	1.11
TKN (ug/g)	-	2.2	-	-0.2	-	-0.2	1.4	-	1.9	1.3

- qualitative
 -# - detection li
 T - top
 B - bottom

Table A2-6: Jackfish Bay Sediment Quality Data for 1987

STATION	#	130	133	137	137	149	153	156	159	164	164
Bio-coll.	#	94	95	98	98	102	104	105	106	108	108
layer sampled		B	T	T	B	T	T	T	T	T	B
Cu	(ug/g)	42	49	43	21	16	12	21	16	37	24
Ni	(ug/g)	23	28	26	21	21	14	24	19	22	19
Pb	(ug/g)	24	33	29	12	6.4	17	7.5	7.7	20	13
Zn	(ug/g)	67	92	81	43	34	39	40	31	64	49
Fe	(ug/g)	22000	-	23000	21000	26000	-	-	-	-	-
Mn	(ug/g)	450	1300	1200	410	300	180	350	320	340	290
Al	(ug/g)	12000	-	12000	11000	10000	-	-	-	-	-
As	(ug/g)	4.2	8.5	7.7	1.7	1.4	2.8	1.7	1.5	2.6	1.9
Cd	(ug/g)	0.6	1	0.8	-0.2	0.63	-0.2	0.46	0.28	0.72	0.39
Co	(ug/g)	12	14	13	11	11	7.8	13	10	11	9.7
Hg	(ug/g)	0.09	0.13	0.1	0.02	-0.01	0.01	-0.01	-0.01	0.06	0.04
K	(ug/g)	1400	-	1600	1200	860	-	-	-	-	-
V	(ug/g)	50	-	51	50	73	-	-	-	-	-
SO4	(ug/g)	42	-	26	26	13	-	-	-	-	-
LOI	(mg/gdry)	-	-	-	-	-	-	-	-	-	-
P	(ug/g)	-	-	0.66	-	0.51	-	-	-	-	-
TKN	(ug/g)	-	-	0.8	-	-0.2	-	-	-	-	-

STATION	#	173	173	176	176	188	188	192	192	195	197
Bio-coll.	#	112	112	113	113	116	116	117	117	118	119
layer sampled		T	B	T	B	T	B	T	B	T	T
Cu	(ug/g)	51	44	62	32	29	28	55	42	13	59
Ni	(ug/g)	25	22	28	27	19	20	28	24	14	29
Pb	(ug/g)	30	35	42	16	20	16	41	28	9.7	41
Zn	(ug/g)	89	83	110	60	55	49	100	74	31	100
Fe	(ug/g)	-	-	-	-	-	-	-	-	-	-
Mn	(ug/g)	340	390	550	600	800	250	1000	340	180	2800
Al	(ug/g)	-	-	-	-	-	-	-	-	-	-
As	(ug/g)	4.3	4.6	7.1	2.9	5.4	2.8	11	4.3	1.8	10
Cd	(ug/g)	1.2	1	1.5	0.37	0.55	0.4	1.3	0.76	0.22	1.7
Co	(ug/g)	11	11	13	14	10	10	14	12	8.3	14
Hg	(ug/g)	0.06	0.14	0.2	0.01	0.06	0.04	0.18	0.09	0.01	0.1
K	(ug/g)	-	-	-	-	-	-	-	-	-	-
V	(ug/g)	-	-	-	-	-	-	-	-	-	-
SO4	(ug/g)	-	-	-	-	-	-	-	-	-	-
LOI	(mg/gdry)	-	-	-	-	-	-	-	-	-	-
P	(ug/g)	-	-	-	-	-	-	-	-	-	-
TKN	(ug/g)	-	-	-	-	-	-	-	-	-	-

- qualitative
 -# - detection li
 T - top
 B - bottom

Table A2-6: Jackfish Bay Sediment Quality Data for 1987

STATION	#	197	200	207	208	209	215
Bio-coll.	#	119	120	124	125	126	132
layer sampled		B	T	T	T	T	T
Cu	(ug/g)	38	27	25	34	26	33
Ni	(ug/g)	24	18	18	27	25	24
Pb	(ug/g)	24	19	7.4	19	12	23
Zn	(ug/g)	68	55	45	72	50	69
Fe	(ug/g)	-	-	27000	24000	25000	-
Mn	(ug/g)	530	460	410	410	490	370
Al	(ug/g)	-	-	15000	19000	19000	-
As	(ug/g)	3.9	3.7	1.5	2.6	2.1	2
Cd	(ug/g)	0.67	0.61	0.21	0.59	0.43	0.55
Co	(ug/g)	12	9.7	13	13	13	12
Hg	(ug/g)	0.06	0.05	-0.01	0.05	0.01	0.06
K	(ug/g)	-	-	1300	3900	4200	-
V	(ug/g)	-	-	76	50	56	-
SD4	(ug/g)	-	-	15	47	18	-
LOI	(mg/gdry)	-	-	-	-	-	-
P	(ug/g)	-	-	0.54	0.62	0.41	-
TKN	(ug/g)	-	-	-0.2	0.6	-0.2	-

- qualitative
 -# - detection li
 T - top
 B - bottom

TABLE A2.7: ANALYSIS OF 1987 SEDIMENTS FOR OIL CONTAMINATION

Station	Mg Residue per kg Dry Sediment ¹
1	63
3	9,030
3	1,526
5	4,582
50	5,004
57	1,427
73	3,598
93	675
96	230
100 ²	9,568
173	2,506

¹ Methylene chloride extractable residues.

² Contained almost entirely high molecular weight petroleum hydrocarbon residues (No. 4 (Bunker B) and No. 6 (Bunker C) residual fuel oil); other stations contained mainly resin and fatty acids.

TABLE A2.8: WATER QUALITY DATA FOR 1969 SURVEY

Station	BOD (ppm)	Suspended Solids (ppm)	Dissolved Solids (ppm)	Phenol (ppb)	Colour (units)
C1	90	27	639	250	500
A4	6.6	3	131	25	60
D4	3.3	2	116	25	30
E6	1.2	2	68	0	5
C7	4.2	2	130	23	30
B6	3.7	2	102	25	40
F2	0.9	1	71	5	5
I3	0.3	1	65	4	5
M2	0.4	1	87	2	5

TABLE A2.10: BOD AND SUSPENDED SOLIDS LOADINGS FROM KIMBERLY-CLARK OF CANADA LTD., TERRACE BAY

Year	Mean BOD (Mt/d)	Mean Suspended Solids (Mt/d)
1987	24.6	5.8
1986	29.6	5.3
1985	35.0	5.8
1984	36.0	6.7
1983	36.1	6.5
1982	-	-
1981	-	5.8
1980	30.9	7.4
1979	47.7	7.4
1978	40.0	7.0
1977	31.5	8.5
1976	39.6	6.5
1975	40.1	7.3
1974	28.5	8.4
1973	30.2	6.3
1972	29.5	4.1
1971	19.3	3.3
1970	6.7	3.2
1969	7.4	4.1

TABLE A2.9: PHYSICO-CHEMICAL CHARACTERISTICS OF COMPOSITE WATER SAMPLES COLLECTED AT JACKFISH BAY IN SEPTEMBER 1987^{1,2}

Parameters	Station ³							
	1	2	3	4	5	6	7	8
Secchi Depth (m)	1.4	7.2	9.0	7.5	10.0	9.0	12.2	11.1
Temperature (°C): 1 m	16.0	15.5	15.4	15.4	15.1	15.3	15.2	15.1
10 m	15.0	14.9	15.1	15.1	15.0	14.9	14.8	14.9
Dissolved Oxygen: 1 m	6.6	9.6	9.8	9.8	9.8	9.5	9.5	9.7
10 m	8.3	9.7	9.8	9.6	9.7	9.5	9.7	9.6
Conductivity (umhos/cm)	160	98	96	97	96	97	96	96
Total Hardness (as CaCO ₃)	50	44	44	44	43	44	43	44
Total Alkalinity (as CaCO ₃)	47	44	43	43	43	44	43	43
Total Acidity (as CaCO ₃)	4	2	1	1	1	1	1	1
Total Residue	160	60	60	70	70	60	55	60
Filtrate Residue	159	59	59	69	69	59	54	59
Particulate Residue	1	1	1	1	1	1	1	1
Turbidity	2.2	0.40	0.40	0.40	0.25	0.35	0.20	0.20
True Colour	74	4	2	2	2	2	1	1
pH	7.4	8.0	8.0	8.0	8.0	8.1	8.0	8.0
BOD (5-day)	2.5	0.6	0.7	0.7	0.6	0.4	0.5	0.6
COD	29	11	3	1	11	6	1	6
Kjeldahl-N	0.29	0.13	0.14	0.14	0.13	0.14	0.12	0.12
Nitrite-N	0.007	0.002	0.008	0.008	0.002	0.002	0.002	0.002
Nitrate-N	1.90	0.28	0.27	0.27	0.28	0.29	0.28	0.28
Total Ammonia-N	L 0.01	L 0.01	L 0.01	L 0.01	L 0.01	L 0.01	L 0.01	L 0.01
Phosphates-P	0.004	L 0.001	L 0.001	L 0.001	L 0.001	L 0.001	L 0.001	L 0.001
Phosphorus	0.019	0.003	0.004	0.003	0.003	0.004	0.002	0.002
Chloride	19	2	1.6	1.6	1.3	1.5	1.2	1.2
Sulphate	7.06	3.60	3.42	3.39	3.42	3.45	3.31	3.42
Ca	15	13	13	13	13	13	13	13
Mg	2.8	2.6	2.6	2.6	2.6	2.7	2.7	2.7
Na	11	1.9	1.5	1.5	1.6	1.8	1.4	1.4
K	0.84	0.50	0.49	0.48	0.51	0.50	0.49	0.50
Si	1.3*	1.3*	1.3*	1.2*	1.2*	1.4*	1.4*	1.4*
Cu (ug/L)	2	2	2	2	2	2	2	2
Ni (ug/L)	L 2	L 2	L 2	L 2	L 2	L 2	L 2	L 2
Pb (ug/L)	L 3	L 3	L 3	L 3	L 3	L 3	L 3	L 3
Zn (ug/L)	5	4	4	3	3	3	4	3
Fe (ug/L)	60	17	13	10	L 5	L 5	22	9
Mn (ug/L)	21	2	L 1	1	L 1	8	L 1	L 1
Al (ug/L)	16	L 10	L 10	L 10	L 10	L 10	L 10	L 10
As (ug/L)	L 1	L 1	L 1	L 1	L 1	L 1	L 1	L 1
Cd (ug/L)	L 0.5	L 0.5	L 0.5	L 0.5	L 0.5	L 0.5	L 0.5	L 0.5
Co (ug/L)	L 2	L 2	L 2	L 2	L 2	3	2	2
Cr (ug/L)	6	L 2	L 2	2	L 2	L 2	L 2	L 2
Mo (ug/L)	13	9	9	13	13	8	9	5
Sb (ug/L)	L 1	L 1	L 1	L 1	L 1	L 1	L 1	L 1

¹ All results except pH are expressed as mg/L, unless indicated otherwise.

² All stations are results of a 10 m composite, except Station 1 which was 4 m.

³ Station locations are shown in Figure 2.3.

* Data may be unreliable - analyzed sample from glass container.

TABLE A2.11: STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS, 1969

	DF1	DF2	DF3
Depth	-0.12057	0.67318	0.40951
Texture (fines)	-0.42575	0.08001	-0.37625
Organic	0.42018	0.18437	-0.91253
Vegetation	-0.23488	-0.62549	0.18789
Odour	0.39530	0.10942	0.82077
% of Variance	51.12	39.63	9.25

TABLE A2.12: STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS, 1975

	DF1	DF2	DF3
Depth	0.51887	1.00847	0.03788
Texture (fines)	0.04277	-0.50627	0.19744
Organic	0.20948	-0.05792	-0.43148
Vegetation	-0.72400	0.59331	0.03785
Odour	0.00717	-0.20521	0.67651
Oil	0.10457	0.30519	0.48682
% of Variance	85.22	9.79	4.99
Depth	-0.06877	-0.53797	0.62489
Cu	-2.26583	2.58956	-1.01233
Ni	0.07789	-0.88191	2.03607
Pb	-4.86921	0.38419	2.97573
Zn	5.93376	0.63265	-4.46951
Fe	0.69639	-0.18481	-0.60023
Mn	0.40604	1.00860	-0.79336
As	0.55165	-1.69450	0.96950
Cd	-0.94187	-0.04531	-0.12933
Hg	-2.19263	-0.61967	1.38019
LOI	-0.73962	-0.73667	-0.19212
TKN	-1.68258	-0.12991	-1.17886
P	0.10481	0.40102	0.87592
COD	5.24483	0.02314	0.65894
% of Variance	66.32	21.65	12.03

TABLE A2.13: STANDARDIZED DISCRIMINANT FUNCTION COEFFICIENTS, 1987

	DF1	DF2	DF3
Depth	-0.17995	0.22980	0.21333
Texture (fines)	0.00855	0.37704	0.48058
Organic	0.25399	0.16901	-0.46019
Vegetation	1.01564	0.06222	0.10790
Odour	-0.08418	0.38913	-0.60783
Oil	-0.06330	0.70572	0.27254
% of Variance	79.99	17.30	2.71



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Hart, D.R.

Benthic community

evaluation of Jackfish Bay Lake andl

Superior 1969, 1975, 1987, a aa



Remedial Action Plan Plan d'Assainissement

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Canada-Ontario Agreement Respecting Great Lakes Water Quality
L'Accord Canada-Ontario relatif à la qualité de l'eau dans les Grand Lacs